

CASSELL'S
BOOK OF
BIRDS





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PAINTED QUAIL-PHEASANT — *KAMOHARUA LUNATA* —

CASSELL'S
BOOK OF BIRDS.

FROM THE TEXT OF DR. BREHM.

BY

THOMAS RYMER JONES, F.R.S.,

PROFESSOR OF NATURAL HISTORY AND COMPARATIVE ANATOMY IN KING'S COLLEGE, LONDON.

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CASSSELL'S BOOK OF BIRDS.

THE STILT-WALKERS (*Grallatores*).

THE birds belonging to this order have unusually long legs, formed in such a manner as to enable many of them to seek their food at a certain distance in the water ; and are further characterised by their long thin neck, slender high tarsi, bare thighs, three or four toed feet, and fully-developed wings ; but the construction of the bill, wings, and tail, and the coloration of the plumage is so various, as to render a general description almost impossible. The *Grallatores* are met with in every portion of our globe, and alike occupy open plains, mountain ranges—even as high as the snow-line—fertile valleys, or arid deserts, contesting possession of the sea-shore or river banks with the True Swimming Birds, and that in such extraordinary numbers, as often to render it a matter of wonder whence a sufficient supply of food can be obtained. During a three days' passage into the White Nile we have seen an almost uninterrupted line of birds of this description, numbering some fifty different species, running, fishing, and bathing, in thousands and tens of thousands, upon each side of the stream, and literally swarming in every lake, pond, or ditch in the vicinity. In Southern Asia and some of the islands of Southern and Central America they are equally numerous, and overspread the sea-shore for miles. Travellers in Southern India tell us that it is not uncommon to see them perched so thickly on the trees as to give these the appearance of being covered with magnificent white blossoms. Insects, worms, spawn, fishes, and various small animals and reptiles, constitute the principal food of these voracious birds ; some also consume seeds, leaves, and tender shoots of plants. As regards their powers of locomotion considerable difference is observable, according to the situations which the various species have been created to occupy ; for while some run with the utmost swiftness, and fly with an energy scarcely inferior to that displayed by the *Raptores*, others move but slowly over the surface of the ground, and make their way through the air with comparative labour and difficulty. Some few frequent the branches of trees, and only take to the water in emergencies ; but, for the most part, they both dive and swim with extraordinary facility. The vocal powers of the *Grallatores* are extremely limited ; indeed, some species are capable of producing nothing more than a hoarse, hissing note, while others endeavour to make up for their deficiency in this respect by clapping with their mandibles. No less various is the development of the senses, or the peculiarities of disposition observable in the members of this extensive section, and to these we must therefore allude more particularly when describing the different groups under which they have been classified. All such as inhabit the temperate zones migrate, whilst those occupying warmer regions make excursions with great

regularity at certain seasons, but probably do not venture to any great distance from their native haunts. Of the incubation of these birds it is impossible to speak in general terms.

The BUSTARDS (*Otides*) [Coloured Plate XXXII.] are of large size, with a heavy body, thick neck, moderately large head, and a powerful beak, almost as long as the head; this beak is of conical form, but compressed at its base, and slightly arched at the ridge of the upper mandible. The tarsi are high and strong, the feet furnished with three toes, the wings wedge-shaped, and formed of well-developed quills, of which the third is the longest; the tail is composed of twenty broad feathers; and the plumage is thick, smooth, and compact: in some instances, the feathers on the head and nape are prolonged or very brilliantly coloured. The male is recognisable from his mate by his superior size and brighter hues. The young resemble the mother after the first moulting. These birds are represented in every division of our globe, with the exception of America, and are especially numerous in the grassy steppes and barren tracts of Asia and Africa. In Europe they occupy the open cultivated country, but are never so numerously met with as in other parts of the Old World. They entirely avoid large forests, but occasionally take up their abode in woodland districts. Such as occupy warm latitudes do not migrate, whilst the natives of temperate zones either go south at the approach of winter, or at least wander forth and sweep the surrounding country. During the breeding season they live in small parties, but afterwards associate in large flocks, often numbering some hundreds. They are remarkably shy and wary, usually keeping to open ground, and in the summer endeavour to elude pursuers by their wonderful rapidity of foot, which enables them to scud along at a most extraordinary pace. At this season, if alarmed, they run for some distance before rising, but once on the wing, fly with strength and rapidity, always keeping near the ground. In the autumn, on the contrary, they rise with facility, and fly to a great distance. Some species of Bustards are capable of uttering clear resonant notes, while others are so deficient in this respect as to produce nothing more than an occasional dull and toneless sound. As regards the development of their senses, with the exception probably of that of smell, they are highly endowed, and in their intercourse with their feathered companions, or even with man himself, exhibit no slight degree of intelligence and courage.

THE GREAT BUSTARD.

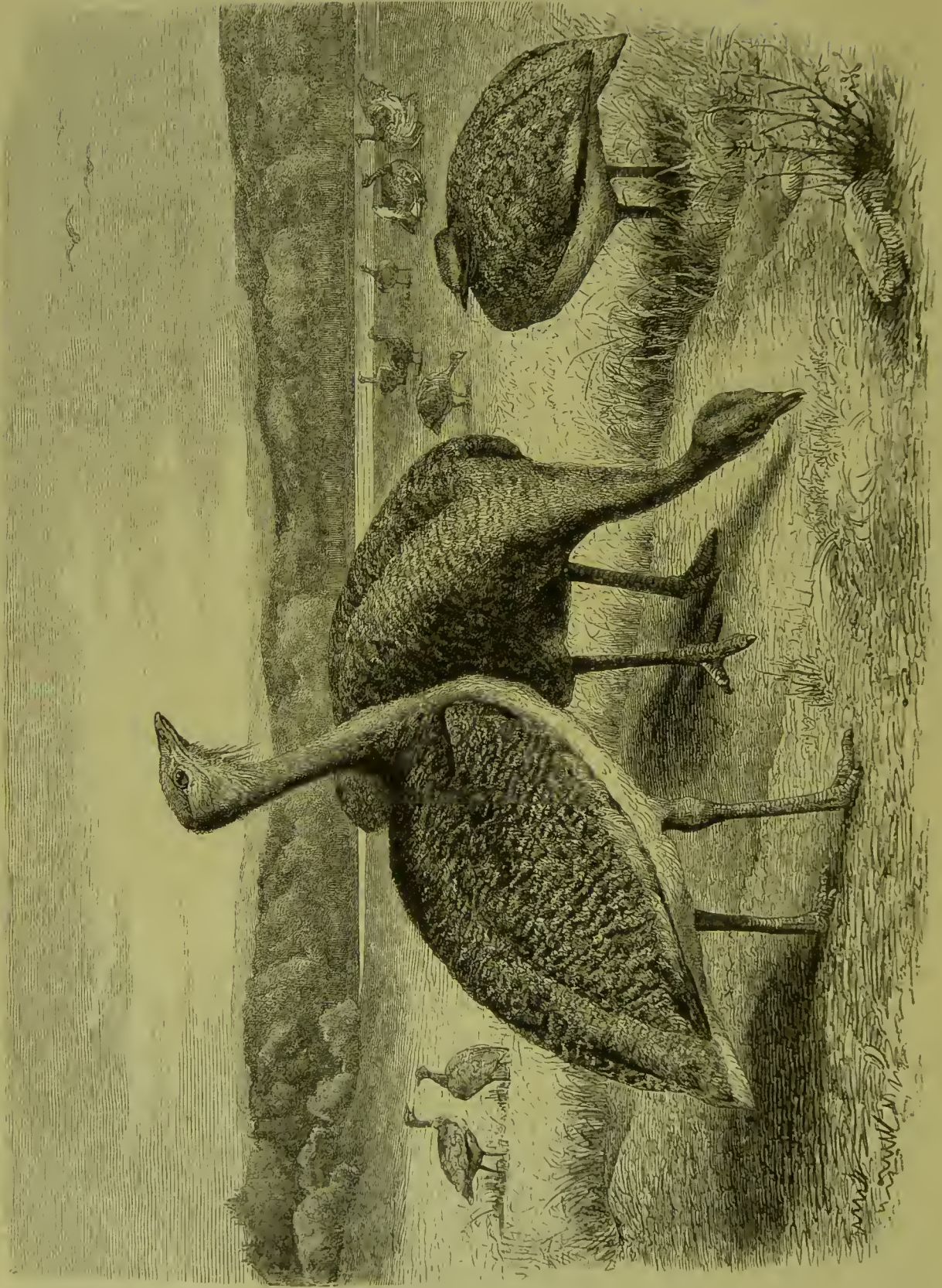
The GREAT BUSTARD (*Otis tarda*), as it has been called, is distinguishable from all other species of the family by the beard-like tuft of feathers that adorns the chin of the male bird. The head, upper breast, and upper part of the wing, are light grey; the feathers on the back reddish yellow, striped with black; those of the nape rust-red, tipped with white, and decorated with a black stripe, the exterior being almost entirely white. The primary quills are dark greyish brown, with blackish brown tip and outer web, and yellowish white shaft; the secondaries are black with white roots, those at the exterior being nearly pure white. The beard consists of about thirty long, slender, and ragged greyish white feathers. The eye is deep brown, the beak blackish, and the foot grey. This fine and stately bird is from three feet and a quarter to three feet and a half long, and from seven feet and a half to eight feet broad; the wing measures two feet and a quarter, and the tail eleven inches. The female is much smaller than her mate, less striking in colour and without a beard; her length is at most two feet and three-quarters, and the expanse of the wings six feet.

These birds occupy the wild open parts of Europe and Asia, only occasionally visiting North-western Africa during the winter months. In Great Britain they were formerly abundant, but are now quite extinct; in France and Germany they are occasionally met with, and are more or less numerous throughout Southern Europe. Mr. Nicholson, who had an opportunity of studying the habits of the Bustard in the neighbourhood of Seville, where it is still common, tells us that

the stomachs of those he killed were literally crammed with stalks and ears of barley, and with the leaves of a large green weed, and a kind of black beetle. Such as he observed generally flew, when flushed, two miles or more at an elevation of at least a hundred yards. The same gentleman states that they never attempted to escape by running, and that if winged, they showed a disposition to remain and fight rather than to have recourse to their legs. An individual, kept by Mr. Bartley, lived principally upon birds, chiefly Sparrows, which it swallowed whole, feathers and all, with the greatest avidity; it also ate the flowers of charlock and the leaves of rape, as well as mice, and, indeed, any animal substance it casually met with. In disposition these Bustards are so shy and wild that, according to Schomburghk, they can never be approached except whilst eating. On the Continent they are often shot with a rifle. The flesh of the young is much esteemed, and is often exposed for sale in European markets. Like other members of the family, this species is not stationary in one place, but when it does not actually migrate, flies, at certain seasons of the year, to a considerable distance from its native haunts. When about to mount on the wing, it takes two or three springy steps, and then rises with slowly flapping pinions until it has reached a certain height, when it darts away with such rapidity as almost baffles the eye and gun of the sportsman. Whilst in flight the neck and legs are stretched forwards, and the hinder part of the body kept low, thus imparting an indescribable peculiarity to the bird when seen in the air. The voice of the Great Bustard is so low as to be scarcely audible except at a short distance. According to Naumann, during the breeding season it utters a deep dull sound, resembling the syllables "hah, hah, hah." In their habits these birds are strictly terrestrial; the whole day is passed upon the ground; the early morning hours being occupied in fighting, screaming, and feeding; at noon they repose for a time and dust themselves preparatory to going again in search of food before evening closes in. The pairing season is in April, and at that time desperate battles take place among the males. During these engagements the tails of the combatants are raised and spread out in the manner of a fan, the wings hang down to the ground, and they charge each other like Turkey-cocks. The strongest collects about him the largest harem, and pairing takes place in the same amusing way as among the Turkeys. The female lays two or three olive-grey eggs, marked with red and liver-brown spots, in a hole which she scratches in the ground. The period of incubation is said to be twenty-eight days, and as soon as the young are hatched, they are capable of following their mother in search of food.

The methods adopted for capturing the Bustard are various. From its extremely shy nature, and from its habit of keeping to the open country, it is not easy of approach. Of wayfaring people, however, it seems to have little apprehension; the usual plan, therefore, is for the sportsman either to clothe himself like a peasant, or to put on female apparel, and to make up to it with a basket on his back, and holding the gun closely by his side. Sometimes, also, these birds are chased with greyhounds, which are conveyed towards them in covered carts, until such time as they evince symptoms of alarm and begin to move off, when the dogs are slipped from their couplings.

In the Catalogue of the Tradescant Museum, preserved at South Lambeth, bearing date 1656, is mentioned: "The Bustard, as big as a Turkey, usually taken by greyhounds on Newmarket Heath;" and Mr. Knox states in his "Systematic Catalogue of the Birds of Sussex," published in 1835, that he met with some very old people who, in their younger days, had seen flocks of these noble birds on the downs. Royston Heath is mentioned by Willughby as frequented by them, and White of Selborne, in his Journal records: "I spent three hours of this day, November 17, 1782, at a lone farmhouse in the midst of the downs, between Andover and Winton. The carter told us that, about twelve years before, he had seen a flock of eighteen Bustards on that farm, and once since only two." The authors of the "Catalogue of the Birds of Norfolk and Suffolk," published in 1827, affirm

BUSTARD'S (*Ovis tarda*).

that Bustards, although much scarcer than formerly, still continue to breed in the open parts of both counties, and Yarrell gives other instances of their occurrence within a comparatively recent period. That they were formerly considered articles of special luxury for the table is evidenced by the price affixed to them in Dugdale's "Origines Judiciales," in an account of the various kinds of game consumed at a feast in the Inner Temple Hall on the 16th of October, 1555, namely: Bustards, 10s.; Swans, 10s.; Cranes, 10s.; while Turkeys are estimated only at 4s.



THE LITTLE BUSTARD (*Otis tetrax*, or *Tetrax campestris*).

THE LITTLE BUSTARD.

The LITTLE BUSTARD (*Otis tetrax*, or *Tetrax campestris*) differs from the above species, not only in the inferiority of its size and general coloration, but in the curious prolongation of the feathers on the nape and throat. In the male bird the black throat is enlivened by white streaks, one of which passes from the ear to the gullet, and the other over the crop; the face is dark grey, the top of the head light yellow spotted and marked with black; the edges of the wings, feathers of the tail-covers and entire under side are white, the quills dark brown, and tail-feathers white, marked with two lines at their extremity. The eye is light or brownish, the beak horn-grey tipped with black,

and the foot straw-colour. The length of this species is from eighteen to nineteen inches, its breadth thirty-six inches, the wing measures ten and the tail five inches. The female is smaller than her mate, and has the side of her head of a yellowish hue; her throat is whitish; breast light yellow, striped with black; the spots upon her mantle are more clearly defined than in the plumage of the male; the feathers of her upper wing-covers are white spotted with black; her under side is white. The Little Bustard is met with principally in the southern parts of Europe, extending from the south of France, over Turkey, Greece, Italy, and Spain; it is particularly numerous in Sardinia, and is seen in large flocks upon the steppes of Southern Russia, particularly during the migratory season. According to Yarrell, this bird can only be regarded as an accidental or winter visitor to Great Britain, it having been killed here only between autumn and the middle of spring. The nest or eggs have never been found in the British Islands. In the course of its migrations, it occasionally visits the country round the Altai Mountains, and Syria. During our stay in Egypt, we saw but a single specimen. Unlike the larger species, the Little Bustard is not restricted to flat and open districts, but frequently inhabits mountainous regions; in Spain it principally occupies vineyards, wherever these may be situated. Although closely resembling the species last described in many respects, it yet differs from it considerably in the ease and comparative lightness of its movements. Its gait is more graceful, and its pace extraordinarily rapid; its flight is swift and capable of being long-sustained. In disposition it is cautious, but by no means so shy as the Great Bustard: if disturbed it seeks safety by squatting close to the ground among the grass or brushwood; and its voice is seldom heard except during the period of incubation. Insects, worms, beetles, grasshoppers, larvæ, and occasionally portions of plants or seeds constitute the food of this species; the young probably are reared exclusively on insect diet. The breeding season commences about the end of April, and is inaugurated by violent battles between the male birds; the eggs, from four to five in number, are about the size of those of the Domestic Fowl, and have a glossy yellowish brown or yellowish green shell more or less distinctly spotted with reddish brown; they are deposited in a slight hollow on the ground. The male seldom goes to any great distance from his mate whilst she is brooding, and beguiles the time by making short undulating flights in her immediate vicinity. We are almost without particulars respecting the rearing of the young.

The HOUBARAS (*Hubara*) constitute a distinct group, comprising but two species, both of which have been found in Europe. The distinguishing characteristics of these birds are their long beak, short foot, the crest upon their head, and the beautiful collar that adorns their neck.

THE INDIAN HOUBARA.

The INDIAN HOUBARA (*Hubara Macquenii*) is an inhabitant of Southern Asia, and from thence has occasionally visited Central Europe and even England. Upon the brow and sides of the head the plumage is of a reddish grey, powdered with brown; the long crest is black in front and white behind; the feathers on the nape are whitish, striped with brown and grey, and those on the back ochre-yellow delicately pencilled, and in some parts spotted with black; the throat is white above and brown below; the upper breast grey, and the belly yellowish white. The collar is composed of long streaming feathers situated on both sides of the neck; of these the lower ones are white, those higher up white with black tips and base, whilst those at the top are entirely black. The quills have white roots and black tips; the tail is of a reddish shade delicately spotted and decorated with two stripes; the eye is bright yellow; the beak slate-grey; and the foot greenish yellow. According to Jerdon, the length of the male varies from twenty-five to thirty inches, and its breadth from four to five feet; the wing measures from fourteen to fifteen, and the tail from nine to ten inches.



THE HOUOZIA ———— (77. MAJESTIC)

Painted by J. A. Smith

After the breeding season, the male moults his beautiful crest. According to Jerdon, the Indian Houbara is found throughout the plains of the Punjaub and Upper Scinde, occasionally crossing the Sutlej at Ferozepore; but no record exists of its occurrence eastward of Delhi. It is probably a permanent resident in the localities where it is found, as no notice is given of its appearance at any particular season. This bird inhabits open and sandy plains, or undulating sandy districts besprinkled with scattered tufts of grass; it also frequents fields of wheat and other grain, and is generally met with in open ground. Being very wary it is approached with difficulty, except in the heat of the day, when it lies down beneath a thick tuft or other shelter, and is easily secured. The Houbara is much hunted with Hawks both in the Punjaub and Scinde, the *Falco sacer* being generally employed for this purpose. The bird, however, occasionally baffles the Falcon by ejecting a horrible, stinking fluid, which besmears and spoils the plumage of his enemy; just as in Africa its congener is said to defend itself from the Sakr Falcon. Adams states that the Houbara is very destructive to wheat-fields, as it eats the young shoots; but insects of various kinds doubtless constitute its principal food. The flesh is exceedingly tender, and is often so loaded with fat that the skins are with difficulty dried and preserved. Captain Hutton tells us that this bird is common in the bare and stony plains of Afghanistan, where it is met with in parties of five or six together. It flies heavily, and for a short distance only, soon alighting and running over the ground. The Houbara has been found in Mesopotamia and other parts of Asia, and occasionally, but very rarely, in Europe. The stomach of a specimen killed in a stubble-field in Lincolnshire, in 1847, was filled with caterpillars of the common yellow underwing moth, small shelled snails, and beetles. The eggs of this species are from three to five in number, yellowish, spotted, and oval-shaped, and about the same size as those of the Turkey. Viera informs us that the eggs are deposited in a slight hollow, amongst the grass or corn; that the brood make their appearance within five weeks; and that they at once begin to run about after the manner of young chickens. The following graphic account of hawking the Houbara is given by Sir John Malcolm, in his "Sketches of Persia":—"We went," says that writer, "to see a kind of hawking peculiar, I believe, to the sandy plains of Persia, on which the Houbara, a noble species of Bustard, is found on almost bare plains, where it has no shelter but a small shrub called 'geetuck.' When we went in quest of these birds we were a party of twenty, all well mounted. Two kinds of Hawks are necessary for this sport: the first, the Cherkh (the same which is flown at the antelope), attacks them on the ground, but will not follow them on the wing; for this reason the Bhyree, a Hawk well known in India, is flown the moment the Houbara rises. As we rode along in an extended line, the men who carried the Cherkhs every now and then unhooded them and held them up that they might look over the plain. The first Houbara we found afforded us a proof of the astonishing quickness of sight of one of these Hawks; she fluttered to be loose, and the man who held her gave a whoop as he threw her off his hand, and then set off at full speed. We all did the same. At first we only saw our Hawk skimming over the plain, but soon perceived at the distance of more than a mile the beautiful speckled Houbara, with his head erect and wings outspread, running forward to meet his adversary. The Hawk made several unsuccessful pounces, which were either evaded or repelled by the beak and wings of the Houbara, which at last found an opportunity of rising, when a Bhyree was instantly flown, and the party were again at full gallop. We had a flight of more than a mile, and then the Houbara alighted and was killed by another Cherkh, which attacked him on the ground. This bird weighed ten pounds. We killed several others, but were not always successful, having seen our Hawks twice completely beaten during the two days that we followed the sport." When taken young, the Houbara is susceptible of being tamed, and has been reared among the fowls in a Farm-yard: when thus treated it is, however, very shy and timorous, hiding itself in holes and corners, and refuses to breed.

THE AFRICAN RUFFLED BUSTARD.

The AFRICAN RUFFLED BUSTARD (*Hubara undulata*), though of larger size, closely resembles the above species in its general appearance, but has the back and wings of a deeper brown shade, and the crest entirely white.

Although rarely met with in Europe, this Houbara is plentiful in the sandy deserts of Arabia and North Africa, where its exquisitely-flavoured flesh is much prized. We are but imperfectly acquainted with its habits, and have no information respecting its eggs or nidification. Gould is of opinion that the crest of the female is either very small or entirely wanting, and that the male bird only wears his plume during the breeding season.

THE FLORIKIN.

The FLORIKIN (*Sypheotidis Bengalensis*), one of the most valued game-birds of India, is during the breeding season of a glossy black upon the head, nape, breast, and entire under side; the back, secondaries, rump, and feathers of the lower tail-covers are of a brownish hue, delicately marked with zig-zag black lines, and each feather decorated with a black spot in its centre; the shoulder-feathers and quills are pure white; of the latter the three first are black upon the outer web, whilst the rest have black shafts and tips. The tail is black, spotted with brown, and tipped with white. The eye is brown, the beak black above, and yellow beneath; the foot is greenish yellow, and the heel blue. This species is from twenty-four to twenty-seven inches long, and from forty-four to forty-seven broad; the wing measures fourteen and the tail seven inches. After the breeding season the male appears in a different garb, in some degree resembling that of his mate. The head and entire upper portion of the body are, in the female, of a pale red, spotted, striped, and marked with black and brown; the feathers on the upper wing-covers are whitish, and those of the nape lined with black; the quills are striped dark brown and red. The female is from twenty-eight to twenty-nine inches long, and fifty inches broad. This fine bird, according to Jerdon, is found throughout Lower Bengal, north of the Ganges, extending to the south bank above the junction of the Jumna, and thence spreading through the valley of the Jumna into Rajpootana, the Cis-Sutlej States, and parts of the Punjaub; in the east it occurs in Dacca, Tipperah, Silhet, and Assam, and northwards to the foot of the Himalayas. It frequents large tracts of moderately high grass, whether interspersed with bushes or otherwise, grass charrs, or rivers, and occasionally cultivated ground; but it appears to be very capricious in its choice, several often congregating in certain spots to the exclusion of others that seemed equally favourable. From February to April it may be seen stalking about the thin grass early in the morning, and it is observed to be often found about newly-burnt patches; or one or more may be noticed winging their way to some cultivated spot, a pea-field, or mustard-field, to make their morning repast, after which they fly back to some thicker patch of grass to rest during the heat of the day. At this time, as well as during the earlier part of the year, they are usually met with singly, sometimes in pairs, male and female, not far distant from each other; or, as stated previously, three or four will be found in some favoured spot. According to Hodgson, the Florikin is neither monogamous nor polygamous, but the sexes live apart, at no great distance, and this would appear to be very probable. The Florikin breeds from June to August. At this season the cock bird may be seen rising perpendicularly into the air with a hurried flapping of his wings, occasionally stopping for a second or two, and then rising still higher, raising his crest at the same time, puffing out the feathers of his neck and breast, and afterwards dropping down to the ground; he repeats this manœuvre several times successively, humming, as Hodgson asserts, in a peculiar tone. Such females as happen to be near obey this saltatory summons; and, according to Hodgson,

when one approaches, he trails his wings, raises and spreads his tail like a Turkey-cock, humming all the while. At this time the hen Florikin is generally to be found in lower ground and thicker grass, and is flushed with difficulty, as she conceals herself at the first approach of danger. She lays from two to four eggs in some sequestered spot, well hidden by the grass; these are of a dull olivaceous tint, more or less blotched, and covered with dark spots. Two females are said not unfrequently to brood near each other.

The Florikin has a steady flapping flight, which is not very rapid, and is seldom prolonged to any considerable distance. When feeding, it is shy and wary, and will often rise at some distance, but speedily takes refuge in a thick patch of grass, and may then be easily approached. It is usually



THE TROCHILUS, OR CROCODILE WATCHER (*Ilyas Aegyptiacus*).

silent, but if suddenly startled rises with a shrill metallic "chik, chik," which is occasionally repeated during its flight. The food of the Florikin consists chiefly of insects, grasshoppers, beetles, and caterpillars; but it also eats small lizards, snakes, centipedes, and similar fare. According to Hodgson, it often consumes seeds and sprouts, but Jerdon is of opinion that these are not taken by choice, but swallowed with the insect diet. This bird is highly esteemed for the table, and by some numbered amongst the most delicate of Indian game. In all parts of India, therefore, the Florikin is eagerly sought for by sportsmen. It is frequently killed during a tiger-chase, and is occasionally taken by the help of the Falcon.

The COURSERS (*Tachydromi*), a group in many respects closely resembling the smaller species of *Otides*, are slenderly-formed birds, with long legs, large, pointed wings, short tails, and a moderate-sized delicate beak of about the same length as the head, in most instances slightly curved, and

covered with a cere at its base. The leg is slender, the foot furnished with three toes, which are armed with delicately small claws, and almost entirely unconnected. The tolerably thick plumage is usually of a nearly uniform reddish brown colour, or sandy yellow, and varies according to the sex and age. These birds inhabit the arid plains and sandy deserts of Africa and Southern Asia, one species alone frequenting such spots as are in the vicinity of water, into which, however, it does not venture to wade. Their flight is rapid and powerful, and upon the ground they run with almost incredible ease and speed. Insects and larvæ constitute their diet; the seeds occasionally found in their stomachs being only accidentally swallowed in their hasty search for food. Except during the breeding season they live in small parties, and frequently associate with birds of similar habits. It is undetermined whether the *Tachydromi* should be regarded as stationary birds or not; some species certainly wander over the country, and occasionally appear at great distances from their native haunts.

THE CREAM-COLOURED COURSER.

The CREAM-COLOURED COURSER (*Cursorius isabellinus*) possesses a slender body and large wings, in which the second quill is longer than the rest; a comparatively short, broadly-rounded tail, composed of from twelve to fourteen feathers; a long, decidedly-curved bill, slender tarsi, and feet furnished with three toes. The thick, soft plumage is of a cream-colour, the upper parts of the body having a reddish and the under side a yellowish tinge; the nape is blueish grey, divided from the rest of the body by a white and a black line commencing at the eyes, and merging into a triangular patch on the nape; the secondaries are sand-yellow, with a black spot near the white tip, and a pale inner web. All the tail-feathers are reddish cream-colour, except two in the centre; these are tipped with white, and striped with black. The eye is brown, the beak blackish, and the foot straw-colour. This species is from eight inches and a half to nine inches long, and nineteen broad; the wing measures six inches, and the tail two inches and a half. The female closely resembles her mate; the young are at once recognised by the mottled and spotted appearance of their somewhat lighter plumage; their primary quills have yellow tips, and the nape is adorned by a whitish stripe bordered by a few black feathers.

The Cream-coloured Courser is a native of Africa, and is met with in Egypt, Nubia, and Abyssinia, being most numerous in the last-mentioned country; it appears in summer along the coast-line from Tangiers to Tripoli, and is seldom found north of the Mediterranean. This bird is one of the rarest visitors to our shores, but three or four specimens have occurred in Great Britain since 1785. Some years ago one was shot in Kent, whilst running over some light land. So little timidity did it exhibit that the gentleman who killed it had time to send for a gun, which did not readily go off, and he in consequence missed his aim. The report frightened the bird away, but after making a turn or two it again settled within a hundred yards, and was dispatched. It was observed to run with incredible swiftness, and at intervals to pick up something from the ground, and was so bold as to render it difficult to make it rise in order to shoot it while on the wing. The note was not like that of a Plover, nor, indeed, to be compared with that of any known bird.

From February to July these Coursers live in pairs, and are usually met with running together over the arid sands of their desert haunts. Travellers tell us that they frequently dart along with such extraordinary rapidity that, like the spokes in a swiftly-turned wheel, their limbs become invisible, so that at a distance they present the appearance of legless bodies darting through the air; if pursued by man, it is not uncommon for them thus to avoid his approach for hours together. If very sorely pressed, they rise upon the wing to a moderate height, and hover for a time before recommencing their wild career. They will allow a rider to come nearer than a man on foot; but even when mounted, it is extremely difficult to get a shot at them, as their many enemies soon render

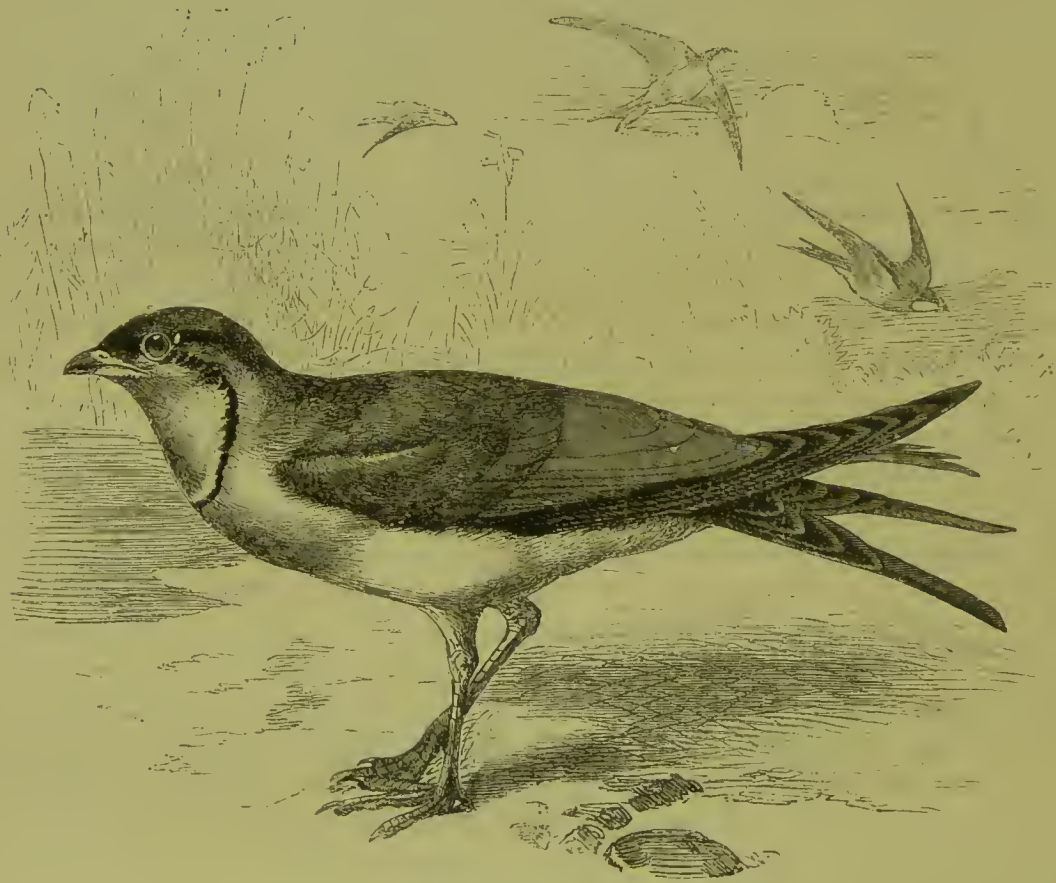
them very timid. We learn from Bädeler that the eggs of this species are from three to four in number, short and broad, with a sand-coloured glossy shell, marked and dotted with a darker shade. These are deposited in a slight hollow in the ground amongst short grass or stones. We are unacquainted with further particulars respecting the nidification of the Cream-coloured Courser.

THE TROCHILUS, OR CROCODILE WATCHER.

The TROCHILUS, or CROCODILE WATCHER (*Hyas Ægyptiacus*, or *Trochilus*), differs in many essential particulars from the above group, to which, however, it is nearly allied. The body of this bird is compact, the neck short, and the head moderately large. The beak is not more than half as long as the head, compressed at its sides, and drawn in at the margins; the upper mandible rises gently from the base, and again curves downwards towards the tip; the lower mandible is straight; the leg is high, bare, and but three-toed; the wing, in which the first quill exceeds the rest in length, is so long, that it extends as far as the tip of the rounded tail. The secondary quills are also unusually developed. In this very beautiful bird, the top of the head, the broad cheek-stripes which unite at the nape, a wide stripe on the breast, and the long slender back-feathers are all black; the eyebrows, throat, gullet, and entire under side are white, shading into pale reddish brown on the sides and breast, and into brownish yellow in the region of the rump; the feathers on the shoulder and upper covers are pale slate-blue or grey; the quills, with the exception of the first (which has only a light border at the base of the outer web) are black in the centre and at the tip, the rest of the feathers being white, thus forming two broad stripes to the wings, which have a very fine appearance when fully spread. The tail-feathers are blueish grey tipped with white, and decorated with a black stripe. The eye is light brown, the beak black, and the foot light grey. The body is about eight inches and a half in length; the wing measures five inches, and the tail two inches and three-quarters. The female is but little smaller than her mate.

Herodotus gives the following quaint account of the supposed strange friendship between this species and the crocodile:—"All other beasts and birds," says that old Greek writer, "avoid the crocodile, but he is at peace with the Trochilus, because he receives benefits from it, for when the crocodile gets out of the water and then opens his jaws, which he does most commonly towards the west, the Trochilus enters his mouth and swallows the leeches which cling to his teeth. The huge beast is so pleased with this service that he never injures the little bird." This well-known account is still current in Egypt, with the addition of another tale traditional among the Nile boatmen concerning this bird, which they call the Zic-zac, in imitation of its call. The crocodile, they say, while reposing on a sandbank, often falls asleep, quite forgetful of his bird friend, who is busy within his large mouth clearing his teeth from their troublesome leech appendages. The Zic-zac, finding the huge door closely shut upon him, gives the crocodile a sharp reminder of his presence by striking his spurs into the mouth of the monster, who immediately sets the prisoner free. The *Hyas Ægyptiacus* is met with throughout all the country watered by the Nile, and on the shores of all the rivers of Western Africa. It is very doubtful whether any stray specimens have really visited Europe as has been stated; this species, according to our own observations, being strictly stationary in its habits, and only quitting one sandbank for another when compelled to do so by the rising of the water. In all its movements this brisk and pretty little bird displays great ease and rapidity. During the course of its flight, which is never long sustained, it keeps close to the surface of the river, and frequently repeats its shrill whistling cry. Towards every living creature the Trochilus manifests the same utter fearlessness which he exhibits towards his neighbour the crocodile, over and around whose large body he constantly disports himself on the sandbanks, and gleans off the insect parasites that torment him. We can distinctly affirm that we have ourselves repeatedly *seen* the little creature

performing the tooth-clearing operation the ancients attributed to it, and which many modern writers have declared to be fabulous. Insects of all kinds, worms, small fish, mussels, and, according to some authorities, scraps of meat, and occasionally seeds, form the principal diet of the Crocodile-Watcher. Only once, in spite of all our endeavours, could we discover the carefully-concealed eggs. After many fruitless efforts our attention was attracted whilst looking through a telescope by a pair of birds, one of which was sitting in the sand, and the other running hither and thither in the immediate vicinity. Using every precaution we approached, but were no sooner observed than the brooding parent arose, and after going hurriedly to a short distance, joined its mate, and



THE COLLARED PRATINCOLE (*Glareola pratincola*).

both together walked slowly from the spot with such a wonderful affectation of indifference, that we were completely taken in, and should not have carried our investigations any further had not a slight unevenness of the ground caught our eye. On removing the sand, two beautiful eggs were brought to light, having a reddish yellow shell, dotted and marked in a variety of ways.

The PRATINCOLES, or SWALLOW-WINGED WADERS (*Trachelinae*), are recognisable at once by the swallow-like formation of their long wings, in which the first quill exceeds the rest in length; by their long, straight, or forked tail composed of fourteen feathers, and their slender bare legs. The toes, four in number, are very slender, the three in front are connected by a skin, and furnished with narrow, sharp, and almost straight claws. The plumage, which varies but little either in the sexes or at different seasons of the year, is very similar in all the species.

The Pratincoles, or Sea Partridges as they are called on the Continent, inhabit the temperate

and warm portions of the eastern hemisphere, and frequent the borders of lakes and rivers in the vicinity of mountains. Like the Swallow, they seek their insect prey whilst upon the wing, or from the surface of the ground, over which they run with great rapidity. The eggs, three or four in number, are deposited in a slight nest placed among rushes or thick marshy herbage.

THE COLLARED PRATINCOLE.

The COLLARED PRATINCOLE (*Glarcola pratincola*) is a beautiful bird, about ten inches long and twenty-two inches and a half broad, with the wing measuring seven inches, and the tail, at the



THE COMMON THICK-KNEE, OR STONE CURLEW (*Edicnemus creptans*).

centre of the fork, two inches and a half. The upper portions of the body are greyish brown, the wings, lower breast, and under side white; the reddish yellow throat is encircled by a brown ring, and the head is brownish grey; the tail-feathers and quills are tipped with black. The eye is dark brown, the beak black, with bright red corners, and the foot blackish brown. The male and female are almost alike in size. This bird inhabits Northern Africa, and the countries watered by the Don, the Volga, and the Caspian and Black Seas; and although it periodically visits France, is rarely seen in Great Britain. Everywhere it occupies the margins of rivers and lakes, equally frequenting the vicinity of fresh and salt water. The Collared Pratincole flies with great ease and swiftness, and indulges in a variety of graceful evolutions whilst on the wing; upon the ground its walk, though rapid, is seldom prolonged, and every step is accompanied by a constant whipping with the tail. Its food consists principally of aquatic insects, but it seizes its prey with equal facility on land, from the surface of the water or in the air; indeed, it is not uncommon to see one of these active little birds dart to a height of several feet into the air, in order to seize a passing fly. It consumes locusts in

great numbers, and, according to Jules Verreaux, is often to be found in the track of the hosts of these creatures that are met with in Southern Africa. The nest consists of a slight hollow in the ground, lined with fibres and blades of grass; the eggs, four in number, have a yellowish brown or greenish grey shell, spotted with grey, and variously marked with light brown and deep black. So great is the attachment of these Pratincoles for their mates and young that we are told, should one of a pair be shot, the other at once runs to its companion's side in utter disregard of its own safety. If the little family are intruded on, the parents frequently feign to be wounded, or by other devices entice the enemy from the nest. The helpless young, if alarmed, crouch to the ground, and are with difficulty detected, owing to the earthy colour of their downy feathers; they grow very rapidly, and soon attain the plumage of the adult birds.

The THICK-KNEES (*Edicnemi*) constitute a sub-family whose members are at once recognisable by their comparatively large size, moderately long thin neck, thick head, large eyes, and a straight beak of about the same length as the head, with the culmen slightly depressed and swollen at the tip. The knees are very thick, the toes three in number, and the wings, in which the second quill is the longest, of moderate size; the secondary quills are of unusual length. The tail is wedge-shaped, and composed of from twelve to fourteen feathers. These birds are migratory, and are met with in all parts of the world, with the exception of North America; open moorlands are the localities they prefer, as affording them the largest supply of the small quadrupeds, reptiles, worms, and insects upon which they subsist, and which they seek during the evening or at night. In the day-time the Thick-knees remain closely squatted beneath a stone or any similar shelter, and if disturbed fly to a short distance, before running off rapidly to some place of concealment. The female deposits her two eggs on the bare ground; the young are able to follow their parents as soon as they quit the shell.

THE COMMON THICK-KNEE, OR STONE CURLEW.

The COMMON THICK-KNEE, OR STONE CURLEW (*Edicnemus crepitans*), is from sixteen to seventeen inches long and from twenty-nine to thirty broad; the wing measures eight inches and half, and the tail about five inches. The feathers upon the upper parts of the body are reddish grey, striped in the centre with blackish brown; the brow, a patch over the eyes and a line above and below the cere are white, the under side and a stripe on the upper wing are yellowish white, the quills black, and the tail-feathers bordered with black and white at their sides. The eye is golden yellow, the beak yellow with black tip, the foot straw-colour, and the eyelids yellow. The plumage of the young is principally of a rust-red. These birds are natives of the desert and barren districts of Northern Africa, Western Asia, and Southern Europe, being especially numerous in Syria, Persia, Arabia, and India. Such as occupy the most northern portions of their *habitat* go south late in the autumn and return to their former haunts early in spring, whilst such as dwell in the countries watered by the Mediterranean remain throughout the entire year in the same localities. In Egypt, notwithstanding their usual preference for barren tracts, the Stone Curlews not only venture into towns and perch upon houses, but occasionally make their nests on the roofs, always provided that the situation be such as to permit them to have a clear space about them, and an elevated perch from whence they can reconnoitre in order to elude the approach of danger. A nearly-allied species, residing in South Africa, frequents the outskirts of forests, selecting spots thickly covered with brushwood, in which it conceals itself if alarmed. The Common Thick-knee or Norfolk Plover, as it is called in England, is only a summer visitor to our country, appearing in April and departing in September or October. It is most numerous in the south and south-west parts of our island, and does not go north of Yorkshire. Ireland it rarely visits. According to Mr. Salmon, of Thetford, "it is numerously distributed all over

our warren and fallow lands during the breeding season, which commences about the second week in April, the female depositing her pair of eggs upon the bare ground, without any nest whatever ; it is generally supposed that the males take no part in the labour of incubation ; this I suspect is not the case. Wishing to procure for a friend a few specimens in their breeding plumage, I employed a boy to take them for me, this he did by ensnaring them on the nest, and the result was that all he caught during the day proved upon dissection to be males. They assemble in flocks previous to their departure, which is usually by the end of October ; but should the weather continue open, a few will remain to a much later period. I started one as late as the 9th December, in the autumn of 1834. Montague records an instance of this bird being killed in Devonshire as early as February in 1807."

The Stone Curlew is singularly shy and cautious in avoiding observers, and should it be disturbed, at once seeks shelter by crouching to the ground ; if still followed, it endeavours to escape by running, and is rarely forced to have recourse to its wings. Its flight is gentle and easy, but seldom long sustained. During the day it usually remains quiet, and in South Africa conceals itself from the presence of man almost after the manner of an Owl. No sooner, however, has night set in, than it appears in quite a new character, darting lightly about on rapid wing in search of food and water, or running swiftly over the surface of the ground. It is not uncommon for a pair of these birds to wander for miles in search of a drinking-place, returning before morning to their usual haunts. Whilst thus actively employed, their clear resonant call of "cur-lui" is constantly heard. Frogs, lizards, mice, and occasionally eggs and small birds form their principal food ; field-mice they catch after the manner of a cat, and crunch the bones previous to swallowing their prey ; insects they also kill before consuming them ; grains of sand and pebbles are employed to assist the process of digestion. At the commencement of spring, battles between the males frequently occur in order to obtain a desired female. The eggs, from two to three in number, are deposited about April in a slight hollow in the sand, these are about the size of Hens' eggs and of the same shape, with a pale yellowish shell, spotted and streaked with deep yellow and blackish brown. The female broods and hatches her family in about sixteen days ; during this time she is carefully guarded by her watchful mate. As soon as the young quit the nest, they follow their parent and receive instruction in the art of obtaining food : should danger be at hand, a cry warns them to seek shelter, and they at once conceal themselves by lying close to the ground. The Thick-knee exhibits considerable courage when protecting its family, and has been seen to defend its nest with vigour against the approach of sheep or dogs. One of these birds, kept by Brehm the elder, became extraordinarily tame and ran freely about the house, testifying the utmost attachment to his master, eating from his hand, and allowing himself to be caressed at pleasure.

The PLOVERS (*Charadrii*) constitute a family of short-necked, large-headed birds, of small size, with moderately long, slender, but thick-jointed legs, three-toed feet, the hinder toe being either entirely wanting or but slightly developed and much raised. The wings are pointed and slender, with the first or second quill longer than the rest, and the secondaries prolonged. The short tail is composed of twelve feathers, and slightly rounded at its extremity. The beak, which is rarely more than half as long as the head, is soft at its base and hard on the raised portion at its extremity. The thick compact plumage varies in the sexes, and according to the season of the year. The Plovers are met with in every quarter of the globe, and while some occupy the interior of the country, frequenting its plains and open grounds, others prefer the vicinity of the sea, or the margins of lakes and rivers, obtaining their food principally from the water ; others, again, select desert tracts, marshes, or mountainous districts. During the breeding season all live in pairs, but near together ; subsequently they collect together into large parties, which gradually increase in size as the season

for migrating approaches. In their habits the Plovers are usually active; they run and fly with equal facility, and though they rarely attempt to swim, are not altogether unsuccessful in that particular. Almost all the species utter a plaintive whistle, and during the breeding season can produce a few connected, pleasing notes. The three or four pear-shaped variegated eggs are deposited in a slight hollow in the ground, in which a few blades of grass are occasionally placed. Both parents assist in the work of incubation. Reptiles, worms, small quadrupeds, and insects constitute the food of these birds. Their flesh is regarded as a delicacy, and they are therefore objects of great attraction to the sportsman, although they often render themselves extremely troublesome by uttering their shrill cry, and thus warning their feathered companions of the approach of danger. From this habit they have received the name of "tell-tales." "The *Charadrius carunculata*, an African species," writes Livingstone, "a most plaguey sort of 'public-spirited individual,' follows you everywhere, flying overhead, and is most persevering in his attempts to give fair warning to all the animals within hearing to flee from the approach of danger."

THE GOLDEN PLOVER.

The GOLDEN PLOVER (*Charadrius auratus*, or *pluvialis*) is at once recognisable by its slender beak and feet, pointed wings, and golden plumage. The feathers on the upper portions of the body are black, thickly covered with small green or golden yellow spots, the entire under side is black. In the autumn, the throat and breast are spotted with yellowish grey; the belly is white; the black tail-feathers are streaked with white; and the black throat is decorated with a white stripe commencing at the brow and merging into the breast. The eye is dark brown, the beak black, and the foot blackish grey. This species is ten inches long and twenty-two broad; the wing measures seven inches, and the tail three inches and a half.

The Golden Plovers are especially numerous in the cooler portions of the globe, becoming gradually rarer towards 57° north latitude. In England they are generally distributed, but such as occupy the southern parts go northwards to the high hills and swampy ground of Scotland and the northern counties of England during the breeding season. These migrations usually take place at night, the birds flying at a considerable height from the ground. During the day they rest or seek for food, and, strangely enough, select not their usually favourite marshes, but fields and cultivated ground. These Plovers are brisk and nimble, running with great rapidity, and flying, not only swiftly, but gracefully. During the period of incubation they indulge in a variety of elegant gyrations in the vicinity of the nest, and their plaintive, clear whistle is heard to most advantage at that season. Worms, larvæ, beetles, snails, and slugs constitute their principal nourishment, and in order to assist digestion small pebbles are also swallowed. Water would appear to be a real necessary of life to these birds, as they love to wash and cleanse their feathers in it daily. The eggs, generally four in number, have a yellowish, stone-coloured shell, marked and spotted with brownish black. These are deposited in a slight hollow in the ground, lined with a few fibres or blades of grass. The young leave the nest immediately after quitting the shell, and follow their parents for about a month, after which time they are able to fly and seek for food on their own account. It is uncertain whether the father assists in the incubation of the eggs. Macgillivray gives the following graphic description of the parental affection observable in the male birds, as witnessed by himself on some heath-covered mountain. "Presently a breeze rolls away the mist, and discloses a number of these watchful sentinels, each on his mound of faded moss, and all emitting their mellow cries the moment we offer to advance. They are males, whose mates are brooding over their eggs, or leading their down-clad and toddling chicks among the (to them) pleasant peat-bogs that intervene between the high banks, clad with luxuriant heath not yet recovered from the effects of the winter

frosts, and little meadows of cotton-grass, white as the snow-wreaths that lie on the hills. How prettily they run over the grey moss and lichens, their little feet twinkling, and their full, bright, and soft eyes gleaming as they commence their attempts to entice us away from their chosen retreats." The attempts to lure intruders from their nest, above alluded to, consist in a most excellent feigning of being desperately wounded and unable to fly, or by affecting to have lamed a leg, and thus enticing the enemy to follow the cunning bird, as it slowly retreats in an opposite direction to that occupied by



THE GOLDEN PLOVER (*Charadrius auratus*), AND THE DOTTEREL (*Eudromias Morinellus*).

its beloved progeny. When the young are able to fly, the Plovers associate in flocks, which remain on the moors till winter begins, when they quit them for pasture lands. As the season advances, and the cold becomes severe, they descend to the coast, and usually remain in the vicinity of the sea during the winter. Occasionally they are so tame that, according to the authority above quoted, they will allow a sportsman to approach within fifteen yards, and even walk around them several times in order to drive them together before taking aim. "In windy weather," continues Maegillivray, "they often rest by lying flat on the ground, and I have reason to think that at night this is the general practice. In the Hebrides I have often gone to shoot them by moonlight, when they seemed as

actively engaged as in the day, which was also the case with the Snipes, but I seldom succeeded in my object, it being extremely difficult to estimate the distance at night. The numbers that at this season frequent the sandy pastures and shores of the outer Hebrides is astonishing."

The Golden Plover is in great request for the table, and is in perfection about September and October.

The specific name of *pluvialis* has been given to the Golden Plover on account of the extraordinary restlessness it exhibits before bad weather. A very remarkable instance of this characteristic is given by the Rev. R. Lubbock, in his "Fauna of Norfolk." According to that gentleman, he was much struck by the perpetual wheeling, now high, now low, of a large flock of these birds one fine bright day at the end of December. They were not still for a moment, and yet there appeared to be no cause for such unwonted disturbance. All next day they were in the same state of uproar, and on the following morning, which was as calm and mild as the preceding, the Plovers had all departed. About five o'clock in the morning, on the same day, the wind began to howl, signs of a severe tempest set in, and by the evening so much snow had fallen that in some places the drifts were six or seven feet in depth.

THE RINGED PLOVER.

The RINGED PLOVER (*Charadrius hiaticula*) is light brownish ash-colour on the upper parts of the body; the large wing-covers being tipped with white; the throat and belly are white, the former having a black patch upon its front; the cheeks are black, divided between the eyes by a white line; the quills are dusky, part of the shafts and the web at the base being white. Of the twelve feathers that compose the tail, the two centre ones are brown, with dark tips, the three next black towards the end, the next one only brown on the inner web, and the outer one entirely white. The claws are black, the eyes hazel, and the feet orange, the beak is orange, tipped with black. During the winter these colours are less bright and the black upon the throat comparatively very pale. The female has less white upon the front and more upon the wings, and her plumage generally is of a more cineraceous brown. The young are dusky black and without the white on the front; their bill is dusky, and their foot yellowish brown. The length of this species is seven inches and half, and the span of the wing, sixteen inches; the bill measures one inch and half.

The Ringed Plover is abundantly met with in Germany and Holland, and is also found in France and Italy; during the summer it visits Russia and Siberia, whilst in Great Britain it remains throughout the greater part of the year, being especially numerous in all such parts of our coast as are well covered with sand and shingle. This species has, however, been known to breed in the sandy warrens of Norfolk and Suffolk, at a considerable distance from the sea. The food of this Plover consists of insects, worms, and small crustaceans. The four eggs laid by the female are deposited near the sea, in a hole in the sand, above high-water mark; occasionally this cavity is lined with tiny stones, of about the size of a pea, and from this circumstance has been derived the name of "Stone Hatch," by which the bird is known in some parts of England. The eggs have a cineraceous brown shell, spotted with black and greyish blue. If disturbed while brooding, the parents at once feign lameness, and anxiously endeavour to lead intruders away from their little family. The note of the Ringed Plover is a shrill whistle.

The DOTTED PLOVERS (*Eudromias*) form a distinct group, having their high straight beak compressed in the centre of the upper mandible, and of greater length than their large head. A portion of the wing is much prolonged, and the tarsus covered with horny plates. The dotted plumage is very similar in the various species.

THE DOTTED PLOVER, OR DOTTEREL.

The DOTTED PLOVER, or DOTTEREL (*Eudromias Morinellus*), has a garb well suited to the rocky haunts that it frequents. The feathers on the upper parts of the body are of a blackish shade, edged with rust-red; the grey head is separated from the rust-red breast by a narrow white and a black line; the lower breast is black in its centre, and the belly white; a broad light stripe passes over the eyes to the nape. The eye is dark brown, the beak black, and the foot greenish yellow. In autumn the upper portions of the body are deep grey, the feathers on the crown of the head black and rust-yellow, and the stripe over the eyes pale rust-yellow; the upper breast is grey and the rest of the under side white. The female resembles her mate, but is less beautifully coloured. This species is from eight inches and three-quarters to nine inches long, and eighteen broad; the wing measures five inches and three-quarters; and the tail two inches and three-quarters. The Dotterels inhabit the mountainous tracts of the northern portions of the globe, and are occasionally seen at an altitude of ten thousand feet above the level of the sea. During the winter they wander south; rarely, however, going beyond the countries bordering the Mediterranean. These migrations take place in August, and are carried on in flocks, which travel both by day and night. The homeward journey is not commenced earlier than April. The Dotterel visits Great Britain during the summer, appearing first in the south-eastern part of England. It seldom goes far west, but takes a northern course, and always inhabits high ground. Mr. Heysham, of Carlisle, gives the following account of the habits of this bird, drawn from his own observation:—

“In the neighbourhood of Carlisle, Dotterels seldom make their appearance before the middle of May, about which time they are occasionally seen in different localities in flocks which vary in number from five to fifteen, and almost invariably resort to heaths, barren pastures, fallow lands, &c., in open and exposed situations, where they continue, if unmolested, from ten days to a fortnight, and then retire to the mountains and the vicinity of lakes to incubate. The most favourite breeding haunts of these birds are always near to, or on the summits of, the highest mountains, particularly those that are densely covered with the woolly fringe-moss (*Tricostimum lanuginosum*), which, indeed, grows more or less profusely on nearly all the most elevated parts of this alpine district. In these lonely places they constantly reside the whole of the breeding season, a considerable part of the time enveloped in clouds, and daily soaked with rain or the drenching mist so extremely prevalent in these dreary regions. The Dotterel is by no means a solitary bird at this time, as a few pairs usually associate together, and live to all appearance in the greatest harmony. These birds do not make any nest, but deposit their eggs, which seldom exceed three in number, in a cavity on dry ground covered with vegetation, and generally near a moderate-sized stone or fragment of rock. In early seasons old females will occasionally lay their eggs about the 26th of May, but the greater part seldom commence before the first or second week in June; they appear, however, to vary greatly in this respect. The male assists in the incubation of the young.

“A week previous to their departure,” continues the same observer, “they congregate in flocks, and continue together until they finally leave this country, which is sometimes during the latter part of August, at others not before the beginning of September. A few birds are, no doubt, occasionally seen after this period, but they are either late broods, or birds that are returning from more northern latitudes.”

With regard to their manners, Mr. Heysham says:—“On the 3rd of July we found two or three pairs near the most elevated portion of this mountain; and on all our visits thither, whether early in the morning or late in the afternoon, the greater part were always seen near the same place, sitting on the ground. When first discovered, they permitted us to approach within a short distance without

showing any symptoms of alarm, and frequently afterwards, when within a few paces watching their movements, some would move slowly about and pick up an insect, others would remain motionless, now and then stretching out their wings, and a few would occasionally tug with each other, at the same time uttering a few notes which had some resemblance to those of the Common Linnet. In short, they appeared to be so very indifferent with regard to our presence, that at last my assistant could not avoid exclaiming, 'What stupid birds these are!' The female that had young nevertheless evinced considerable anxiety for their safety, whenever we came near the place where they were concealed, and as long as we remained in the vicinity, she constantly flew to and fro above us, uttering her note of alarm. As soon as the young birds were fully feathered, two were killed for the purpose of examining their plumage in this state, and we found that after they had been fired at once or twice they became more wary, and eventually we had some little difficulty in approaching sufficiently near to effect our purpose. The stomachs I dissected were all filled with the elytra and remains of small coleopterous insects, which in all probability constitute their principal food during the breeding season."

The pear-shaped eggs of the Dotterel are three or four in number, and have a smooth lustreless shell, of a pale yellowish brown or greenish hue, irregularly spotted with white. Upon one occasion we accidentally disturbed a brood, and having taken the young in our hand and shown them to the mother, she at once boldly ruffled her feathers, shook her wings, and endeavoured to excite pity by a variety of gesticulations. No sooner were the prisoners released than she uttered a cry of delight, and gathered them under her wings, after the manner of a Barn-door Fowl. The flesh of this Plover is extremely delicate.

The SHORE PLOVERS (*Ægialites*) occupy the sandy or gravelly shores of rivers on the sea-coast, and are characterised by their comparatively small size, delicate beaks, long pointed wings, and the uniform hue of the sandy plumage on the upper parts of the body. The under side is white, and the neck encircled by a band.

THE LITTLE SHORE PLOVER, OR LITTLE RINGED PLOVER.

The LITTLE SHORE PLOVER, or LITTLE RINGED PLOVER (*Ægialites minor*), as the best known species is called, scarcely exceeds a Lark in size; the length of the body being about six inches and a half, and the span of the wing eighteen inches. The wing measures four inches and one-third, and the tail three inches and one-third. In this bird the cheeks, crown of the head, and upper portions of the plumage are earthy grey, the under side is white as far as the throat, round which passes a black band; the quills, bridles, and a streak on the brow are also black. The latter is bounded by a white line, which is again edged with black. The eye is dark brown, with a circle around it of King's yellow; the beak is black, and the foot reddish grey. All these colours are paler in the female. The young are without the black collar on the neck. This species is met with throughout Europe, almost the whole of Asia, and a great portion of the African continent. It, however, only visits the more southern countries during the course of its migrations, which extend from August and September to March or April. Southern Europe is, we believe, the farthest point at which it is known to breed. In the northern portions of the globe it almost exclusively frequents the rush-covered banks of marshy water at some distance from the sea, but occasionally, during the winter journeyings, which they make in large flocks, these birds are seen upon the coast.

The Little Ringed Plover is rare in Great Britain. Mr. Gould says, "We are indebted to our friend Mr. Doubleday, of Epping, for the loan of an example of this elegant little Plover, which he informs us was taken at Shoreham, in Sussex. From the extreme youth of the specimen

transmitted to us, it is clear that it must have been bred on the spot. The food of this species consists of various insects, larvæ, mussels, and similar fare. They drink much, bathe freely once or twice a day, and frequently obtain their prey from under stones in or near the water." In their habits they closely resemble such of their brethren as we have already described.

The four pretty little pale reddish-yellow eggs have a delicate lustreless shell, marked and dotted with grey and blackish brown, and are deposited in a slight hollow on a gravelly or pebbly bank, at such a height as to be in no danger from the rising of the water. During fine days, the parents leave



THE LAPWING, OR PEEWIT (*Vanellus cristatus*).

the brood exposed to the rays of the sun, but in rainy weather and at night they share the labour of incubation, and sit constantly. The young are hatched in sixteen or seventeen days, and leave the nest as soon as their plumage is dry, and in a few days begin to pick food. In a few days more they are able to support themselves, but remain with their parents during the first migration.

The LAPWINGS, or PEEWITS (*Vanelli*), represent a family of birds characterised by their size, the strength of their beak, and the height of the tarsi. The foot is, in many instances, furnished with four toes. In some species the head is adorned with a crest; some have spurs on the wings, and others a remarkable development of skin at the corners of the beak. The sexes are nearly alike, and the young speedily attain the plumage of the adult bird.

The Peewits occupy every latitude, and are met with in the most diverse situations, for whilst some species exclusively seek the vicinity of water or marshy ground, others frequent arid plains or the burning sands of the desert. In disposition they are lively, and possess such a restless curiosity concerning every object around them as frequently renders them most troublesome to the sportsman, whose insidious approach they at once proclaim to all their feathered companions. All the members of this family, though social in their habits, live almost constantly in pairs, which remain together even during the winter migrations; indeed, it is probable that at this season even the young have each a chosen companion. Insects, worms, and similar fare afford them the means of subsistence; but they also occasionally consume seeds, young leaves, and shoots. The nest is merely a hollow in the ground more or less slightly lined, and contains four eggs. The flesh of these birds is hard and indigestible.

THE PEEWIT, OR LAPWING.

The PEEWIT, or LAPWING (*Vanellus cristatus*), represents a division of the above group having four toes upon the foot, blunt wings, and a crest upon the head. The crown, fore part of the throat, upper breast, and half the tail, are glossy black; the mantle-feathers deep green, with a blue or purple gloss; the sides of the neck, lower breast, body, and lower half of the tail are white, and some of the feathers on the upper and lower tail-coverts dark rusty yellow. The crest is composed of long narrow feathers. The female has a smaller crest, and the fore parts of the throat spotted black and white. The young resemble the mother, but are duller in their tints, and have broad rust-yellow feathers on the upper portion of the body. In all the eye is brown, the beak black, and the foot dirty red. This species is thirteen inches long and twenty-seven broad; the wing measures eight inches and a half, and the tail four inches. (See Coloured Plate XXXIII.)

The Lapwing occupies a wide range, extending from 61° north latitude, as far as Northern India and North Africa. In some parts of China it is as common as in Great Britain. Some writers are of opinion that this Peewit breeds in Spain, but, according to our own observations, it only appears in that land at the end of October, and leaves again to go north at the beginning of March. Radde mentions having seen it on the Amur, being particularly numerous at Tarai-Noor; strange to say, such as he observed did not remain in the vicinity of the water during the summer, but occupied dry and barren steppes throughout the whole season of incubation. In India, according to Jerdon, this species is only found in the Punjaub, where it breeds. The Peewit is especially numerous in Holland, and is generally distributed over the British Isles, except in the extreme north of Scotland and the Hebrides, everywhere occupying moorlands, downs, and swampy lands, and depositing its four eggs in a slight hollow, which is lined with a few straws or blades of grass. The eggs are pyriform, and have a pale brownish yellow or olive-coloured shell, prettily spotted and marked with brownish black. The young leave the nest as soon as they are hatched, and if alarmed, at once take refuge in the moss or grass. Both parents exhibit great affection and anxiety for their young, and should a stranger venture to approach the nest, fly around him, and use every endeavour to lure him from the spot, sometimes running as if lame, or fluttering as though with a broken wing to tempt pursuit; nevertheless, in spite of all her arts, the Lapwing's nest is frequently rifled, and numbers of eggs are sent to the London market. According to Mr. Selby, the trade of collecting them continues about two months, and great expertness in the discovery of the nests is shown by those accustomed to it. They generally judge of their situation pretty accurately by the conduct of the female birds, who, upon being disturbed, invariably fly from the nest, and then run near the ground for a short distance without uttering any alarm cry. The males on the contrary are very clamorous, and fly round the intruder, endeavouring by various instinctive arts to divert his attention. So expert, says another observer, have some men become, that they will not only walk straight



Phoebastria immutabilis

THE LAYSAN; ——— VANELLUS CRISTATUS

Vanellus cristatus

to a nest which may be at a considerable distance, but tell the probable number of eggs it may contain, generally judging of the situation and number of eggs by the conduct of the female bird.

When the young are reared, the Lapwings associate in flocks which, at the end of autumn, exchange the higher moorlands for lower ground, and frequent the ploughed fields. When going to a distance, they fly with speed often in an irregular body, but sometimes in lines, alighting in silence after various evolutions. About the middle of March they return to higher ground, again to resume their family duties.

The Lapwing feeds on worms, insects, slugs, and larvæ, and on this account is frequently kept in gardens; but when thus domesticated, it needs a supply of food, when wintry frosts debar it from its usual diet.

The two English names of this bird have been derived from its most striking peculiarities, the one, Peewit, from its singular cry, and the other, Lapwing, from the strange, remarkable flapping of its wings during flight.

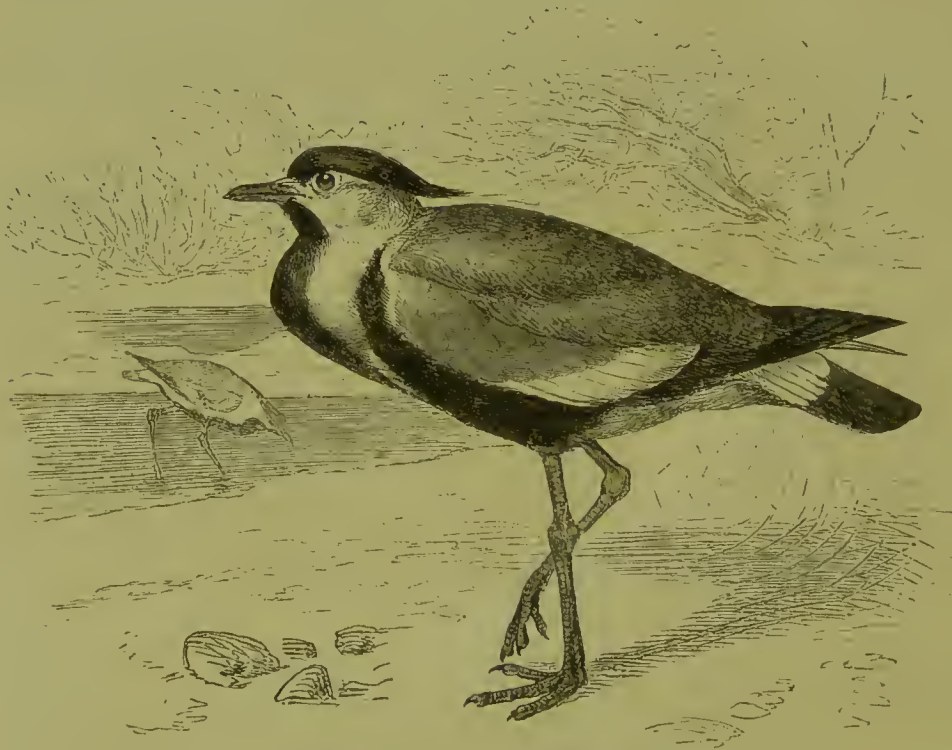
THE SPUR-WINGED LAPWING.

The SPUR-WINGED LAPWING (*Hoplopterus spinosus*) is characterised by a spur-like appendage on its wings, its long legs, three-toed feet, a blunt crest upon the head, and its comparatively pointed wing, in which the second quill exceeds the rest in length. In this species the mantle is greyish brown, part of the head and the under side are black; the sides of the head, throat, belly, and the nape and region of the wings are all white; the primary quills and tail-feathers are principally tipped with black, some of the largest feathers on the wing-covers and two entire tail-feathers being white. The sexes are alike in plumage, and do not vary in their tints at any season of the year.

This bird is very common in Egypt, where it usually occupies the vicinity of water; nevertheless it entirely avoids the sea-coast, but occasionally sojourns near lakes of brackish water. In the northern portion of Central Africa it is constantly seen, but is rare in Nubia, Eastern Soudan, and Habesch. During the spring and autumn it sometimes wanders as far as Greece, and, according to Lindermayer, is occasionally met with there on the sea-coast. Whether it also breeds in Greece, is at present uncertain. This bird, called "Siksak" by the Arabs, in imitation of its peculiar cry, is sometimes erroneously supposed to be the bird alluded to by Herodotus, as clearing the parasites from the teeth of the crocodile. This mistake has no doubt arisen from the fact that it frequently occupies the sandbanks on which these monsters repose, and is often seen running fearlessly over and about their huge bodies. Like the rest of their brethren, these Lapwings render themselves most obnoxious to the naturalist or sportsman, by the pertinacity with which they warn all their companions of the approach of danger, and by thus constantly annoying him, destroy the impression of pleasure that the grace and ease of their movements would otherwise excite. Day and night this restlessness continues, and has given rise to a legend among the Arabs that this tormenting little bird received the curse of perpetual sleeplessness, together with the spur upon its shoulder, as a punishment for former indolent habits. Towards its feathered associates it exhibits the same irritable demeanour, frequently attacking even such as are larger than itself with astonishing boldness, and often inflicting serious damage with its armed wing. Insects, worms, mussels, and sand, are usually found on dissection in its stomach. Its flesh is very unpalatable. The period of incubation commences about the middle of March. In Egypt a moist field is usually selected by a breeding pair, whilst on the Upper Nile sandbanks are preferred. The eggs are smaller than those of the European Lapwing, and are coloured with mixed green, yellow and grey, marked with blackish brown spots, which do not extend over the narrow end. We have found as many as six eggs in one nest, but possibly they were deposited by more than one female. Occasionally we have seen earth strewn on the nest, but whether this was the result of accident or design we could not ascertain. When first hatched the young are covered with greyish

down, but soon acquire plumage similar to that of the adults, and leave the nest very shortly after quitting the shell. Like others of their kind, they run with astonishing rapidity, and conceal themselves with great dexterity at the approach of danger. As regards their movements and habits, these Lapwings resemble such species as we have already described.

The LAPPETED PEEWITS (*Sarciophorus*) are recognisable by the skin-like appendages at the base of the beak, and by a horny excrescence at the joint of the wing ; the powerful bill is moderately long and the foot rather large ; the hinder toe is but slightly developed.



THE SPUR-WINGED LAPWING (*Hoplopterus spinosus*).

THE LAPPETED PEEWIT.

The LAPPETED PEEWIT (*Sarciophorus pileatus*) is reddish grey on the upper parts of the body and white on the nape and under side ; the head, throat, tips of the quills and tail-feathers are black. The eye is a beautiful golden yellow, the beak blood-red at its base and black at the tip, and the foot red. The length of this species is ten inches and two-thirds, and the breadth twenty-four inches ; the wing measures six inches and three-quarters, and the tail three inches and a half.

These birds occupy barren plains and live in pairs or small families. During our travels through Bahiuda and Cordofania we saw them daily, and upon one occasion met with them in the Samchara, seeking for insects among the droppings of the cattle. In their habits they resemble both the Common and Spurred Peewit, their flight being similar to that of the latter bird. In disposition they are shy and wary. We were unable to obtain further particulars concerning them.

THE TURNSTONE.

The TURNSTONE (*Streptilas interpres*) is the representative of a sub-family, characterised by their powerful body, short neck, comparatively large and high-browed head, and long pointed wing, in

which the first quill is the longest, some of the feathers being of unusual length. The tail, composed of twelve feathers, is scarcely of medium size, and has a gently-rounded tip ; the conical beak is shorter than the head, curves slightly upwards, and is flattened at its culmen ; the short legs are powerful ; the foot furnished with four toes ; and the brightly-coloured plumage thick and compact. During summer the adult male has the brow, cheeks, a broad collar on the nape, the lower part of the back, the throat, feathers of the lower wing-covers, and a stripe above the wings of a pure white ; a line commencing near the brow and passing near the eyes to the throat, the fore part and sides of the neck and breast is black ; the mantle-feathers are spotted black and red, and those on the crown striped black and



THE TURNSTONE (*Streptopelia interpres*).

white ; the feathers of the wing-covers are chestnut-brown, spotted with black, the quills blackish, and the tail-feathers white at the roots and tip, with a broad black stripe near the extremity ; the rump also shows a broad brown stripe. The eye is brown, the beak black, and foot orange-yellow. This species is nine inches long and eighteen across the span of the wing ; the wing measures six inches and the tail six inches and a half. In the young the plumage is a mixture of blackish brown and rust-yellow, the fore part of the body being greyish black.

These birds are met with in all parts of the world, everywhere occupying the sea-coast. In Scandinavia, Iceland, and Greenland, they appear at the end of April or beginning of May and leave again about the end of the last week of August, at which time they occur on the shores of the Mediterranean. They visit England regularly, remaining during the winter and going north to breed. They are restless and active birds, and run rapidly, with wings lowered, but usually only for a short

distance, pausing from time to time, for a few moments, in the course of their swift career ; their flight is easy, and accompanied by a variety of graceful evolutions. Their cry, which is shrill and penetrating, is uttered with such various degrees of rapidity, as to produce very different effects. In disposition they are cautious and usually shy. Audubon states that he had ocular demonstration of the fact, that, as its name imports, this species actually turns over stones and other objects to search for food, and gives the following interesting account of the proceedings of four of these birds, which he observed on the beach of Gaveston Island, whilst he was engaged together with a sailor in carrying the carcase of a deer to be washed :—"They merely," he says, "ran a little distance out of our course, and on our returning came back immediately to the same place ; this they did four different times, and after we were done remained busily engaged in searching for food. None of them were more than fifteen or twenty yards distant, and I was delighted to see the ingenuity with which they turned over the oyster-shells, clods of mud, and other small bodies left exposed by the retiring tide. Whenever the object was not too large, the bird bent its legs to half their length, placed its bill beneath it, and with a sudden, quick jerk of the head pushed it off, when it quickly picked up the food which was thus exposed to view, and walked deliberately to the next shell to perform the same operation. In some instances when the clusters of oyster-shells or clods of mud were too heavy to be removed in the ordinary manner, they would not only use the bill and head, but also the breast, pushing the object with all their strength, and reminding me of the labour which I have undergone in turning over a large turtle. Among the sea-weeds which had been cast on the shore they used only the bill, tossing the garbage from side to side with a dexterity extremely pleasant to behold. In this manner I saw these four Turnstones examine almost every portion of the shore, along a space of from thirty to forty yards ; after which I drove them away, that our hunters might not kill them on their return."

Upon the coast of Cape May and Egg Harbour this species is known by the name of the "Horsefoot Snipe," from the fact that it subsists during a portion of the summer almost entirely on the spawn and eggs of the great "king crab," called by the common people the "horsefoot." This spawn may often be seen by bushels in the hollows and eddies on the coast.

During the breeding season these birds retire to high northern latitudes, so that their mode of nidification was long a mystery, until Mr. Hewitson, who made diligent search for the Turnstone's nest on the coast of Norway, was at last successful. "We had," he writes, "visited numerous islands with little encouragement, and were about to land upon a flat rock, bare, except where here and there grew tufts of grass or stunted juniper clinging to its surface, when our attention was attracted by the singular cry of a Turnstone, which in its eager watch had seen our approach and perched itself upon an eminence of the rock, assuring us by its querulous oft-repeated note and anxious motions that its nest was there. We remained in the boat a short time, until we had watched it behind a tuft of grass, near which, after a minute search, we succeeded in finding the nest, in a situation in which I should never have suspected to meet with a bird of this sort breeding ; it was placed against the ledge of the rock, and consisted of nothing more than the drooping leaves of the juniper-bush, under a creeping branch of which, the eggs, four in number, were snugly concealed and admirably sheltered from the many storms by which these bleak and exposed rocks are visited, allowing just sufficient room for the bird to cover them. We afterwards found more nests with little difficulty. All the nests contained four eggs each. The time of breeding is about the middle of June. The eggs measure one inch and two lines in breadth, and are of an olive-green colour, spotted and streaked with ash-blue and two shades of reddish brown."

The parents are much attached to their offspring. The habits of the latter resemble those of young Plovers. Audubon mentions an instance in which one of these birds was reared by a lady, who fed it on boiled rice and bread soaked in milk.

THE PIED OYSTER-CATCHER, OR SEA PIE.

The PIED OYSTER-CATCHER, or SEA PIE (*Hæmatopus ostralegus*), possesses a compact body, large head, long straight beak, which is much compressed and of conical form; moderately high, powerful feet, furnished with short broad toes connected by a skin; medium-sized and pointed wings, in which the first quill is the longest; and a short straight tail, composed of twelve feathers. The plumage on the upper portions of the body is of a glossy black; the neck, crop, and rump, a patch under the eye and the belly are white; the primary quills and tail-feathers black, with white roots. The eyes are bright blood-red, edged with orange. The broad rings that surrounds the eyes and the beak are vermilion, the latter tipped with a lighter shade; the feet are dark flesh-red. The length of the male is sixteen inches; its breadth across the wings thirty-one inches and a half; the wing measures nine inches and a half, and the tail fully four inches. The female is smaller than her mate, and has less black upon her breast. During the winter this species has a crescent-shaped white patch upon the throat.

The Pied Oyster-catchers are met with along almost the entire coast of the Old and New Worlds (being especially numerous on the more rocky portions). They are also found in Greenland and on the islands of the Northern and Arctic Oceans. During the winter they appear in Southern Europe, but are by no means common. The migrations of these birds vary considerably with the climate of their native haunts; such as inhabit shores warmed by the Gulf Stream remaining in the same localities from one year to another; whilst in those latitudes where the seas are covered with ice during the cold season, they are compelled to go south in order to obtain the requisite supply of food. During the course of these enforced wanderings the mainland is rarely traversed, the fugitive keeping as near as possible to the shore, or, when necessary, crossing even large tracts of water without any inconvenience. Occupants of the shores of the eastern and northern seas seek their winter quarters principally in France and the north of Spain, whilst those occupying the coast of China appear regularly in Southern India. In Great Britain the Pied Oyster-catchers are permanent residents, and never extend their flight to any great distance, but after the breeding season assemble in flocks, and in winter betake themselves to estuaries and promontories. In April these flocks disperse in pairs, and rove about the sandy beach in small parties. While searching for food they usually keep apart from other birds, but are occasionally seen in company with the Curlew, Turnstone, and Redshank. At high-water they retire to rocky headlands or similar places of safety, where they remain until the turn of the tide has left their hunting-grounds again exposed. While reposing, according to Macgillivray, the Sea Pies stand with their legs quite straight, or on one leg only, the other being drawn up; the body is held in a horizontal position; the neck retracted; the head either directed forward or with the bill buried among the feathers of the back. In this attitude they present a very curious appearance when seen in a high wind, as each bird directs its breast towards the quarter from which it blows. On a sandy beach they often follow each other in long lines, or crouch to the ground. Their flight is strong and steady, performed by regular beats of the extended wings, with the neck drawn in, and the feet directed backwards. When going to sleep they rest on one leg only. Over the surface of the sandy shore they run with great rapidity, and wade with ease in muddy places, their short, flat-soled feet being well adapted for that purpose. During the period of incubation the Sea Pies utter a great variety of pleasing notes, whilst at other times their cry is not particularly agreeable. Of all the many feathered occupants of our shores, these birds are by far the most restless and pugnacious, though apparently without malice. Towards all their larger companions they exhibit an incessant desire to resent intrusion, and at once dart upon a bird of prey with loud cries, and drive the unwelcome visitor away from the spot. Should no foreign foe appear, and thus

afford them an opportunity for venting their exuberant spirits, the males will harry and annoy each other until their fury rising, the strife that apparently began in sport terminates in a real battle, during which the antagonists strike each other most mercilessly with their wings and beak. Towards men they exhibit extreme shyness, and, except during the breeding season, scarcely permit his approach. In this particular, however, they show much intelligence, and readily distinguish the shepherd or fishermen from their enemy the sportsman. "After the breeding season," says Macgillivray, "the Sea Pies, especially plentiful in the Scottish Isles, form flocks that are frequently very numerous, being composed of from twenty to one hundred individuals or more.



THE PIED OYSTER-CATCHER, OR SEA PIE (*Hematopus ostralegus*).

At this period they are met with chiefly on the low rocky shores, or at the mouths of rivers, where at low water they obtain their food, which consists of limpets, barnacles, small bivalve shells swallowed entire, young crabs, and other marine animals. Although frequently seen on extensive low sands, they seem rather to betake themselves thither for security than for the purpose of looking for food. On low, pebbly, muddy, or sandy shores they always prefer the edge of the water, in which they wade, although they search the exposed parts. Limpets and barnacles form their chief food; but, although they have been said to eat oysters and large bivalve mollusca, I have not found such animals in their stomach. The bivalve shells found in their gizzard or oesophagus are generally, when of small size, either entire or merely crushed, but when large, are deprived in a greater or less degree of their testaceous envelopes. Along with their food they swallow particles of gravel, frequently of considerable size. I have found some a quarter of an inch in diameter."

Divalve shells, when closed, are usually opened by these birds by striking them at the hinge, while cockles are obtained by holding the shell with the foot and wrenching with the bill as with a crowbar. When the shores are flat and the surface thus remains covered with a shallow stratum of water, after the tide has ebbed, the Oyster-catchers find their prey more readily, as the shells are then partially opened, and they can easily insert their wedge-shaped bill and force them asunder; but where the sand soon dries and there are no rocks from which the limpet can be obtained, they follow the line of the advancing and retreating waves. Such of these birds as are stationary during all seasons commence the business of incubation as early as the middle of April, while such as migrate do not lay until somewhat later in the spring; at this season, after the usual rivalry between the males, the pairs keep apart from each other, but frequently remain in the immediate vicinity of some of their weaker feathered associates, with whom they live in the utmost harmony. The nest of the Sea Pie is a mere hollow in the shore, and is usually situated amongst the tangled weed thrown above high-water mark, or on grassy spots in the immediate vicinity of the sea. The eggs, two or three in number, are large and of an oval form with a pale brownish shell, spotted, streaked, and very variously marked with light violet, deep greyish brown and greyish black. The female, who alone broods, does not sit during the noonday hours, and hatches her little family in about three weeks. The young at first conceal themselves if alarmed, but even at a very early period can run, swim, and dive with considerable facility. Whilst in charge of their offspring, the parents exhibit unusual courage and foresight, and should the mother perish, the father at once undertakes all her duties. The flesh of the Sea Pie is unpalatable, but by many the eggs are much esteemed. Gadamer states that a pair of Oyster-catchers reared by him from the nest became so tame that they knew his voice and greeted his appearance with loud cries. These birds were allowed to run freely about the poultry-yard, and rendered excellent service to its more timid occupants by warning the Fowls of the approach of a Hawk, or any other feathered marauder.

The SNIPES (*Limicolæ*) form a second division of the Stilt-walkers, which embraces several minor groups, all characterised by having the hinder part of the body of cylindrical form, a moderately long neck, a medium-sized and much-arched head, and a long slender beak; the latter is curved or straight throughout its length, with the sides compressed and grooved to the tip, which is obtuse and in some instances flexible, of a much softer texture than in most birds, and frequently covered with a highly sensitive membrane. The long slender tarsi are usually more or less high; the toes generally long, the lateral ones sometimes united to the middle toe by a membrane; the hind toe short, resting on the ground, or entirely wanting; the long pointed wing is more or less sickle-shaped; and the short tail composed of from twelve to twenty-six feathers. The plumage varies considerably in thickness and coloration, both in the various groups and at different seasons of the year; the sexes are, however, very similar to each other. The members of this section usually inhabit marshy land, the borders of swampy lakes, and the sea-coast. In the breeding season they live in pairs, but congregate in large flocks during the autumn or winter, and are more or less migratory. Fruits, worms, slugs, and aquatic mollusca, afford them their principal means of existence; some few also eat seeds. Both sexes assist in the process of incubation, and generally construct a slight nest upon the ground. The eggs are pear-shaped and from two to four in number.

The TRUE SNIPES (*Scolopæzes*) are characterised by their powerful but comparatively short body, moderately long neck, which is compressed at its sides, a very high-browed head, and large, prominent eyes. The long slender beak is straight on the side and rather turned down near the tip, which is obtuse and bent over that of the lower mandible; the extremity of the bill is thickened, soft, and very

tender at its extremity, so that this part, which is richly supplied with nerves, serves as a delicate organ of touch, and is used for searching in the soft ground for the insects and worms that constitute the food of these birds. The more or less long tarsi are covered in front with narrow transverse scales, the anterior toes are long, that in the middle being of unusual length, the hinder toe is short, elevated, and reaches to the ground, the wings are broad, but comparatively short, and the short broad tail, composed of from twelve to twenty-six feathers, is rounded at its extremity. The plumage of this group, which is soft and thick, varies in its coloration according to the situations occupied by its possessor.

The Snipes must be regarded as natives of the north and temperate portions of the earth, although they also visit its warmest latitudes. Many species frequent swampy woods, but for the most part they seek their food in marshes and morasses, remaining concealed during the day and searching for their food principally early in the morning or during the evening hours. Although by no means of social disposition, they are occasionally seen congregated together in considerable numbers; these assemblages are, however, owing apparently to the attraction of a suitable locality, as each bird lives, as it were, for itself and pays but little heed to its companions. Early in spring, the males exhibit a very pugnacious disposition, and have many fierce encounters with their rivals before obtaining a mate. The movements of the Snipes, both on the ground and in the air and water, are extremely active and easy, and the facility with which they seize and extract their insect prey from the mud and ooze, must be regarded as truly astonishing. Their voice is usually monotonous and harsh, but during the period of incubation the male indulges in a variety of gesticulations and peculiar notes. When alarmed, these birds generally lie close to the ground or among the herbage, or suddenly starting on wing escape by a flight which is short, elevated, rapid, and irregular. The four moderate-sized and pear-shaped eggs have a dirty yellow or greenish shell spotted with brown, and are deposited in a slight hole in the ground. The young, when they are hatched, are clad in a downy chequered garb of black and brown, and quit the nest on the day they escape from the shell. The Snipes are migratory in their habits and generally breed in high northern latitudes, but some are indigenous in this country, in all parts of which they rear their young, being especially numerous towards the north of Britain. Their flesh is much esteemed.

THE WOODCOCK.

The WOODCOCK (*Scolopax rusticola*) possesses a comparatively strong beak, rounded at the tip, and short stout feet with a very small claw upon the hind toe. The wing is blunt, and the tail composed of twelve feathers. Upon the forehead the plumage is grey, the sides of the head and nape are striped brown and reddish yellow; the rest of the upper portions of the body are spotted with various shades of brown, grey, and black. The large eye is brown, and the beak and foot horn-grey. This species is twelve inches long and twenty-two broad; the wing measures three, and the tail three inches and a half.

The Woodcock is met with throughout the whole of Europe, with the exception of its most northern islands, and throughout Northern and Central Asia. It also visits North-western Africa and India, as far south as Madras, and, according to "Mountaineer," breeds immediately beneath the snow line of the Himalayas. In Sweden, Great Britain, and the northern part of Germany, some frequently remain throughout the entire year, while those occupying colder latitudes invariably wander south at the approach of autumn. By far the greater number, however, of the birds that appear in England and Scotland are merely winter residents, arriving about October, and leaving for more northern regions in March. Mr. Selby, who resided near the eastern coast of Northumberland, and thus had ample opportunities for observing the arrival of flocks of Woodcocks, says:—

"I have found that they always come over in the greatest abundance in hazy weather with little wind, and that blowing from the north-east; and it is probable that they then find the upper region of the atmosphere in which they fly freer from the counter currents of air, than in more open weather. After a night of this description, I have frequently met with great numbers upon the edges of plantations, in hedges, and even in turnip-fields, and enjoyed excellent sport for the day; but, on seeking for a renewal of success, I have not found a single bird, the whole flight having proceeded on their course during the intervening night. It is during this time that Woodcocks, like most migratory birds, perform their journeys; and it seems probable that those which halt upon the eastern coast of Scotland, and the northern counties of England have completed their task from shore to shore, between sunset and sunrise, as they appear but little fatigued on their arrival, provided the weather has been calm. The distance of the coasts of Norway and Sweden, from whence these visitors are supposed to come, offers no objection to this supposition, as a continued flight of eight or ten hours, even at a rate inferior to what I conceive they are capable of accomplishing, would suffice for the transit. "A respectable person who lived upon the coast," continues the same observer, "and who, being a keen pursuer of wild fowl, was in the habit of frequenting the sea-shore at an early hour in the morning, assured me that he had more than once noticed the arrival of a flight of Woodcocks coming from the north-east just at day-dawn. His notice was first attracted by a peculiar sound in the air above his head; this, upon attending to it, he found proceeded from birds descending in an almost perpendicular direction which, upon approaching the shore, separated and flew toward the interior; these he pursued and shot, and they proved to be, as he had surmised, Woodcocks." The first flocks of these birds that arrive upon our coast, according to Yarrell, consist for the most part of females which only remain for a few days and then journey further south, while the later flocks, some of which remain to breed, are principally composed of male birds. So numerous are Woodcocks met with in Greece at some seasons, that we are told, three Englishmen on a sporting tour in the Peloponnesus shot no less than 500 brace in the course of three days; during the actual winter they are far less common in that country, and by February have generally commenced leaving Southern Europe and North-western Asia for Morocco, or the regions around the Altai Mountains. Taking one year with another in Europe, March may be regarded as the month in which these birds commence their migrations, the exact date for setting forth depending, according to the testimony of an observer who studied their habits for seventeen years, not as is usually supposed on the actual state of the weather, but on signs of approaching cold, to which the keen instinct of these birds renders them peculiarly susceptible. Like many of their feathered brethren, they usually travel against the wind, and do not continue their journey on dark or very windy nights: if thus compelled to descend, they prefer seeking shelter in some wood or forest, but if traversing an open country, often take refuge in a well-planted garden or hedge-row. During the course of their flight, however, they keep as much as possible over wooded localities, and unless alarmed, do not rise to any great height in the air, through which they sweep rapidly, ascending, descending, or making their way through the branches of the forest with equal ease and dexterity. When endeavouring to attract the attention of their females, the motions of these birds are entirely different; at such times the plumage is inflated, and the aspirants for admiration fly heavily along with slowly flapping wings, in a manner resembling that of the Owl. Should two rival males encounter each other when thus engaged, they at once commence hostilities, and after a merciless attack with beak and wings, often end by falling together into the trees beneath them. The strangest circumstance connected with these exhibitions of jealousy is, that they occur amongst the flocks during the migratory season, and not, as is generally the case, only at the period of incubation. Upon the ground the Woodcocks are less expert in their movements; they walk slowly, with a somewhat tripping step, and never

venture any distance on foot. In their native woods they usually remain comparatively quiet during the day, and only exhibit their full activity and briskness towards evening. In disposition they are extremely shy, and invariably prefer shady and retired situations, only penetrated by a kind of twilight. If chance should lead them across an open space during the day, they generally crouch flat on the ground, and, owing to the sombre hue of their feathers, are not easily detected; in this position they will often remain until almost trodden upon, when they suddenly rise and endeavour to elude the sportsman by darting through the trees and bushes, always taking care to keep well on the



THE WOODCOCK (*Scolopax rusticola*).

side opposite to the enemy. In their intercourse with each other, Woodcocks are by no means social, every individual going its own way without any reference to its companions. In their demeanour towards men, and birds of a different species, they usually exhibit the utmost timidity. Instances, however, are recorded of their having been reared from the nest, and rendered so tame that they would come at their owner's call, and greet his approach with every indication of delight. The call of the male consists of a sort of humming note, while the female only utters a gentle piping cry. The food of these birds consists of worms, larvæ, and insects, which are sought for by means of the long bill beneath dry leaves and cattle droppings, or are obtained by probing the surface of moist and marshy localities.

"The Woodcock," we are told, in the notes to the "Lays of the Deer Forest," "breeds to a

considerable extent in most parts of the forest, and also in other woods of Morayshire, the Aird of Inverness, and on the Dee, the Don, the Spey, and other parts of the Highlands, but within our knowledge nowhere so numerous as in Tarnaway. Without any search, and merely on the accidental occasions of roe-hunting, we have found in one season nineteen nests with eggs. It would, however, be more proper to say *beds* than *nests*; for, like those of the Plover, they are merely slight hollows formed by the nestling of the birds in dry soft spots, or on the fallen leaves. As the nests are on dry ground, the old ones will sometimes carry their young in their claws to the nearest spring or green strip. Several times when the hounds, in beating the ground, have come upon a brood, we have seen the old bird rise with a young one in her claws, and carry it fifty or one hundred yards away, and, if followed to the place where she alighted, she has repeated the transaction until too much harassed. One morning, while sitting on a grey stone, I saw a dark eye which was fixed upon mine from the bed of dead leaves before me, when suddenly the little brown head of a young Woodcock peeped out from the feathers of the old one's breast, uttering that plaintive cry for which language has no sign. There were two more young Woodcocks, and to relieve the anxiety of the *madre*, I left her. Near the place where I found her there was a soft green strip such as Woodcocks love. I had no doubt that the family would be there next day, and as I passed I turned aside to see what they were doing. Upon a dry bank, half down the brae, I almost stumbled over a bird which rose at my feet, and as it started through the trees I saw that it had something in its claws, and at the same time I heard the plaintive cry of little Woodcocks just under my feet. I looked down, there were two, and I thought a Hawk had carried off the third, and perhaps killed the mother. This, however, I found, on following the bird, was the old Woodcock, which, being flushed again suddenly, after a low flight of only a few yards, dropped what she was carrying—her own young Woodcock. I gave her a little time to find him, which was not difficult, as he called to her as loud as his tiny bill could pipe. In a few moments I ran forward, and she rose with him in her feet, her long legs dangling and swinging with her little burden like a parachute. I left her to pursue her flight in peace, and went on my way, but I have no doubt she went back for the other two, for several times afterwards I saw them all together in the soft green glade." The three or four eggs laid by the female are large, broad, and short in shape, with a smooth, lustreless, light reddish yellow shell, very variously marked with different shades of red and brown. The mother alone broods and hatches her little family in about seventeen or eighteen days. If disturbed whilst sitting, she allows the intruder to approach quite close before quitting her charge, and after flying to a short distance almost immediately returns; even should she be deprived of an egg she still continues to brood. Whilst thus engaged the female receives little or no attention from her mate, but the young are no sooner hatched than the male at once undertakes his share of parental duties, and exhibits equally with the mother a most touching anxiety and devotion in their behalf. Should an enemy intrude upon them, the old birds employ every effort to attract attention to themselves, while the young immediately crouch beneath the long grass or moss, in which they can rarely be discovered without the aid of a dog. When three weeks old the fledglings begin to use their wings, but are capable of seeking food before they can fly. Until lately it has been supposed that Woodcocks lay but once in the year, or at most only produce a second supply of eggs if the first has been stolen or destroyed. Recent observations, however, tend to prove this idea to be erroneous. Hoffmann, in particular, after long and careful investigation, is of opinion that in favourable seasons each pair of these birds rears two broods.

The MARSH SNIPES (*Gallinago*) are characterised by their comparatively long, flat beak, moderately long, bare foot, and long, thin toes, which are entirely unconnected; the wing is much incised, and the short tail composed of from fourteen to twenty-six feathers.

THE COMMON SNIPE.

The COMMON SNIPE, or BECASSINE (*Gallinago scolopacinus*), has the upper portion of the body brownish black, and is decorated with a broad, rusty yellow stripe upon the centre of the head, and four long lines of the same colour on the back and shoulders ; the under side is white, the fore part of the throat grey, while the upper parts of the breast and sides are spotted with brown. The tail is formed of fourteen feathers. The eye is dark brown, the beak black, and the foot deep grey. This species is eleven inches long and seventeen broad, the wing measures five inches, and the tail two inches and a quarter.

The Common Snipe is met with principally in the north of Europe and Asia, but also probably breeds in the southern portions of the former continent and in North Africa ; in some parts of Europe it is extremely common, and in England and Scotland breeds not only in the northern counties, but along the whole southern coast. Large flocks also come to the British Isles from Scandinavia during the winter, and leave again about the month of April. Recent observations have proved that the species of Marsh Snipes met with in North America are not identical with the *Gallinago scolopacinus*. During the course of its migrations the Common Snipe wanders over all lands between forty-five and thirteen degrees north latitude ; they appear in India at the beginning of October in numerous flocks, and at certain seasons occupy the shores of the Nile and Ganges with great regularity. This species frequents marshy grounds, moist rush-covered localities, or wet meadows, and usually avoids the extremes of heat and cold by keeping to the moors in summer and seeking the shelter of the valleys during the winter. In severe frosts, or storms of snow, it takes refuge near springing rills or the immediate vicinity of flowing streams. Insects, worms, or slugs afford its principal means of subsistence ; and for these it searches by probing the moist ground with its long bill. Although frequently associated in flocks during their migrations, these birds always exhibit the same unsocial disposition, each individual pursuing its own course, or seeking its provender in entire disregard of its companions. As with the Woodcock, this species goes in quest of food principally after twilight ; but, unlike that bird, is also active during the day, and at most reposes for a few hours at noon. Upon the ground the Common Snipe moves leisurely but easily, keeping the head erect ; its flight is rapid, and usually takes a zigzag course immediately after the bird has risen into the air. Generally when about to fly it suddenly takes an upward direction ; and after rapidly pursuing an undulating path, returns almost immediately to the spot from whence it started ; and then, drawing in its wings, falls obliquely to the ground. If alarmed, it frequently springs high, and takes flight beyond reach of the gun, turning nimbly, in a zigzag direction, for 200 or 300 paces, and sometimes soaring out of sight. This Snipe swims well, and occasionally takes to the water when not compelled to do so ; if hotly pursued by a bird of prey or other enemy, it sometimes endeavours to save itself by diving. At the commencement of the breeding season, the males indulge in most arduous endeavours to attract the attention of their desired mates, whose admiration they essay to excite by soaring rapidly into the air, describing a variety of evolutions, and then darting earthward with closed wings. All these active exertions, which often continue for half an hour at a time, are accompanied by a most strange humming sound, respecting which naturalists are not yet agreed, some considering it to be produced by the rapid action of the powerful pinions, while others have supposed it to be occasioned by the long tail-feathers. Whilst engaged in these animated manœuvres, the male birds not only so far forget their usual timidity as to perch freely on the projecting branches of trees, but entirely lay aside their usual indifferent demeanour towards their companions, and frequently vent their jealous rivalry in fierce and sharp encounters. The female forms her loosely-constructed nest of withered leaves, heath-grass, and a few feathers, in some retired spot, generally beneath the shelter of

the stump of an alder-tree or willow. The eggs, which are comparatively large, and usually four in number, are lustreless, and of yellowish or greenish white, spotted with grey and various shades of brown. The young are hatched by the mother in fifteen or sixteen days, and when they quit the shell are covered with chequered down; this is moulted in about eight or ten days, and in a few weeks they are able to fly. The parents tend their little family with great care, and feed them until their bills are strong enough to enable them to provide for themselves. Sir Humphry Davy states that if the young are molested, the old birds at once commence a loud drumming sound over the head of the intruder, as though to divert his attention from their beloved charge, and thus allow the latter time to seek concealment; which they at once do, hiding themselves completely from view with most admirable instinct.

The MOOR SNIPES (*Philolimnos*) are recognisable by their short high beak, with narrow culmen and broad tip; their graduated tail, composed of twelve feathers, and pointed at its centre; their very muscular stomach; and the brilliant metallic gloss upon the plumage of the back.

THE JACK SNIPE.

The JACK SNIPE (*Philolimnos gallinula*) is only about nine inches long and fifteen broad; the wing measures four inches, and the tail about one inch and two-thirds. In this species, the bridles, a stripe below the cheeks and the head, are brown, with two lines above and below the eyes of reddish yellow; the blackish blue mantle-feathers have a beautiful green and purple sheen, and are decorated with four reddish yellow stripes. The throat, breast, and sides are grey, lined and spotted with brown; the rest of the body is white. The quills and tail-feathers are pale black; the latter edged with reddish yellow. The sexes are almost alike in colour; during the spring the plumage of the female is of a reddish hue upon the wings, and that of the young less resplendent and glossy.

Russia and Western Siberia may be regarded as the strongholds of this small bird, which makes its appearance later and departs earlier than the Common Snipe. It breeds in the northern parts of Europe and Asia, and is very generally diffused throughout India. In England it is but rarely seen in the summer, and appears in one particular spot year after year. The Jack Snipe prefers thick coverts, and compared with those of its kind already described is usually but seldom seen, although in some localities it is occasionally tolerably numerous. At the commencement of March, it generally quits its winter quarters, and returns under cover of the night to its native haunts. This Snipe is usually found in pairs, and seeks its food on marshy ground; but at other times conceals itself among the neighbouring long grass and rushes. If disturbed, it delays taking wing until the enemy is almost treading upon it, and has actually been caught when just rising, by having a hat put over it. When flushed, the Jack Snipe does not utter any note.

The SANDPIPERS (*Tringæ*) are known by their slender body, moderately long neck, small head, long pointed wings, in which the first quill exceeds the rest in length, and a moderate tail, either rounded or doubly incised at its extremity. The beak is either longer than, or as long as, the head, slender, compressed at the sides, with the culmen near the tip slightly depressed and enlarged. The slender bare foot is furnished, in most instances, with four toes; of these the three placed in front are long and entirely disunited, while the very small and delicate hind toe is raised too high to reach the ground. The thick compact plumage is principally a mixture of greyish brown and reddish yellow, but varies considerably according to the season, and age or sex of the bird; in the winter it is ashy grey above, white shaded with grey beneath. The colour of the sexes is nearly alike. Sandpipers are met with in all portions of the globe, but principally frequent its northern parts.

Marine marshes on the sea-shore, or the borders of lakes and rivers, are the situations they prefer, visiting the temperate climates during the winter, and returning to the colder latitudes to spend the summer months. Their migrations take place in large parties, which fly by night or early in the morning. During the recess of the tide, they may be seen upon the sea-shore, seeking their food from the refuse of the ocean, or quietly and intently probing the sands in search of worms and shell-fish, and sometimes retreating rapidly before the advancing surge, and profiting by what the wave leaves on its retreat. In all their movements they display great activity, either when running rapidly and lightly on the fore part of their toes over the surface of the moist sand, when swimming in the water, or when winging their way with a varied, graceful, and rapid flight through the air. The voice of these birds is clear, piping, and resonant. All the various species are social and peaceful in their habits, and it is probable that the encounters in which they indulge at certain seasons of the year are as much in sport as in rivalry. The food of the Sandpiper consists of worms, small molluscs, insects, larvæ, and similar fare, but occasionally of delicate seeds. The four pear-shaped eggs are deposited in a dry hollow on the ground, which is slightly lined with a few blades of grass. The female alone broods; the young come forth covered with down, they at once leave the nest, and grow with great rapidity.

The CURLEW SANDPIPERS (*Limicola*) have a compact body, short neck, and small head; the beak is longer than the head, and only soft and flexible at its tip, which is broad, and curves slightly downward. The low, stout, bare foot is furnished with four toes. The wings are pointed, and have the first and second quills of equal length, and longer than the rest; the tail is short and pointed towards its centre.

THE PIGMY CURLEW SANDPIPER.

The PIGMY CURLEW SANDPIPER (*Limicola pygmæa*) has the crown blackish brown, decorated with reddish yellow stripes; the mantle-feathers are black lined with reddish yellow; the upper wing is ash-grey; the feathers on the lower throat, crop, and sides of the breast are reddish yellow, spotted with brown and tipped with white; the under side is white. The eye is brown, the beak reddish grey at its base and black at its extremity, and the foot dark greenish grey. During the autumn the upper parts of the body are dark grey, and the feathers have a somewhat mottled appearance, as their shafts are of a dark and their edges of a light shade. This bird is six inches long and thirteen broad, the wing measures four inches and one-third, and the tail one inch and a half.

The Pigmy Curlew is met with principally in the northern parts of Asia and America, and also, though more rarely, in Europe. In England it has been known to breed occasionally. Moist river-banks or marshy localities are the situations it prefers, and from these it obtains the insects, larvæ, and worms upon which it principally subsists. Unlike the rest of the family, it does not associate with other birds. The Pigmy Curlew flies well and rapidly, walks with short interrupted steps, and, if disturbed, crouches flat to the ground, and allows the enemy to approach quite close before taking wing. The voice resembles that of the Common Sandpiper. Keitel tells us that in its habits this species does not differ from the rest of the family. The eggs found by that gentleman in Lapland were long and pear-shaped, with a dull olive-yellow shell, marked with greyish brown.

THE SANDERLING.

The SANDERLING (*Calidris arcuaria*) has the hinder toe entirely undeveloped. This small bird is only seven inches long and fifteen broad. In spring the upper parts of the body are black, or brownish red, spotted with yellow and white; the blackish brown upper wing is marked with zigzag rust-red spots, and striped with white. The under side, as far as the white breast, is reddish grey, the

feathers having dark spots on the shafts and white edges. The five outer tail-feathers are whitish grey, with white roots; the eyes are deep brown; the beak and the foot deep grey. During winter the feathers on the upper portions of the body are light grey tipped with white, darkly spotted on the shafts, and the under side is pure white.

This elegant little bird occupies the coasts of all the northern portions of the globe. During the course of its migrations it visits Southern Europe, keeping near the shores even while journeying from one country to another, and but rarely crossing the mainland. This species is met with on most of the sandy shores of Great Britain and Ireland, and is occasionally found near large pieces of fresh water; it is not supposed to breed in this country, but has been seen in January and February,



THE SANDERLING (*Calidris arenaria*).

April, June, August, and October. Like other Sandpipers, it associates in more or less numerous flocks while in winter quarters, but lives in pairs throughout the summer. In disposition it is gentler and more confiding than other members of its family, but closely resembles them in its general habits. Upon the ground it runs with grace and agility, and exhibits the utmost dexterity in its beautiful and rapid movements through the air, during which it frequently joins company with parties of other shore birds. With so little timidity does the Sanderling regard man, that it is not uncommon for it to permit his close approach, and even if shot at it often only moves a few paces from the spot. Naumann mentions that upon one occasion, after watching the proceedings of five of these birds that were standing almost close to him in most evident disregard of his presence, the thought struck him that he would arrange some snares he had in his pocket and take the whole party prisoners. This he accordingly did, the intended victims quietly watching his arrangements, and finally walking amongst, and entangling themselves in the treacherous strings.

The MUD SANDPIPERS (*Pelidna*) are comparatively slender birds, with a straight or curved beak, of about the length of the head, and slightly widened at its tip; slender bare feet, furnished with four toes, moderate-sized wings, and a rounded or doubly incised tail. The plumage is moulted twice in the year.

THE MUD SANDPIPER.

The MUD SANDPIPER (*Pelidna subarquata*) is about seven inches long and ten broad. The wing measures five inches, and the tail one inch and two-thirds. In spring the entire under side is rust-red of various shades; the feathers on the crown of the head are blackish, with reddish grey edges; the nape rust-red streaked with white; and the rest of the upper parts of the body covered with deep black feathers, spotted with light rust-red, and edged with light grey or rust-yellow. The tail-feathers are ash-grey, those in the centre being the darkest; all have white shafts and edges. The eye is brown, the beak black, and the foot blackish brown. In autumn the feathers on the head and nape are blackish grey, varied with white and dark edges; those on the back and upper wings are deep blackish grey with black shafts; and the feathers on the under side whitish grey, shaded, spotted, and shafted with a deeper tint; the bridles are brown; a whitish line passes above the eye. In young birds the feathers of the head are greyish brown with rusty grey edges; those of the back and shoulders of a blackish shade with reddish yellow edges; the under side and rump are white, gullet and crop reddish grey. The sexes are almost alike in colour.

These birds are met with in all the northern portions of our globe, and during the course of their winter migrations appear with great regularity in North Africa, where they are very common; they also visit the shores of the Red Sea, Indian Ocean, Atlantic, and the Dead Sea, and have been seen about the Cape of Good Hope. In Europe they especially resort to the coasts of France and Holland, where they arrive about the middle of April, and leave again from the end of July to October; their migrations are always carried on at night. Flat muddy shores are the localities they principally frequent, and over these they disport themselves with great activity, moving lightly about in pursuit of food throughout the entire day, only pausing to indulge in a short sleep at noon. If disturbed they at once rise rapidly into the air, and after darting to some little distance, return immediately to the spot whence they were driven. In disposition they are social and naturally fearless, but frequently learn to imitate the timidity exhibited by most of their companions on the sea-shore. According to our own observations, they are often seen associated with other birds, and apparently under the guidance of one of the largest members of the party, whose movements and example they obey in a manner most amusingly resembling a game at follow-my-leader, running wherever he runs, and flying where he flies, as though actuated by one spirit; these gambols usually terminate by all the males uttering a warning cry, and the whole flock swooping in a compact mass for some few hundred paces over the water, and then returning to the shore, there to resume their animated sport. It is improbable that this species breeds in the southern parts of our globe; such nests as we have found in northern regions were nothing more than a slight hollow in the ground, and contained four pear-shaped eggs, having a greenish shell shaded with dark grey, and spotted with deep brown.

The DWARF SANDPIPERS (*Actodroma*) are small birds, with short beaks, either quite straight or curving gently towards the tip; the moderate-sized feet are slender and bare, with the toes almost entirely unconnected.

THE DWARF SANDPIPER.

The DWARF SANDPIPER (*Actodroma minuta*), the smallest of all the tribe, is only five inches and a half long and eleven inches and a half broad; the wing measures three inches and a half, and the

tail one inch and a half. During spring the feathers on the crown of the head are black, edged with rust-red, those on the nape grey marked with a darker shade, and those on the sides of the neck and upper breast light rust-red spotted with brown; a whitish stripe passes over the eyes, and between the latter and the beak a dark brown line. The eye is brown, the beak black, and the foot greenish black. In autumn all the feathers on the upper portions of the body are deep grey, with brown lines on the shafts; the gullet, sides of the head, and lower breast are reddish grey, the rest of the under side is white.

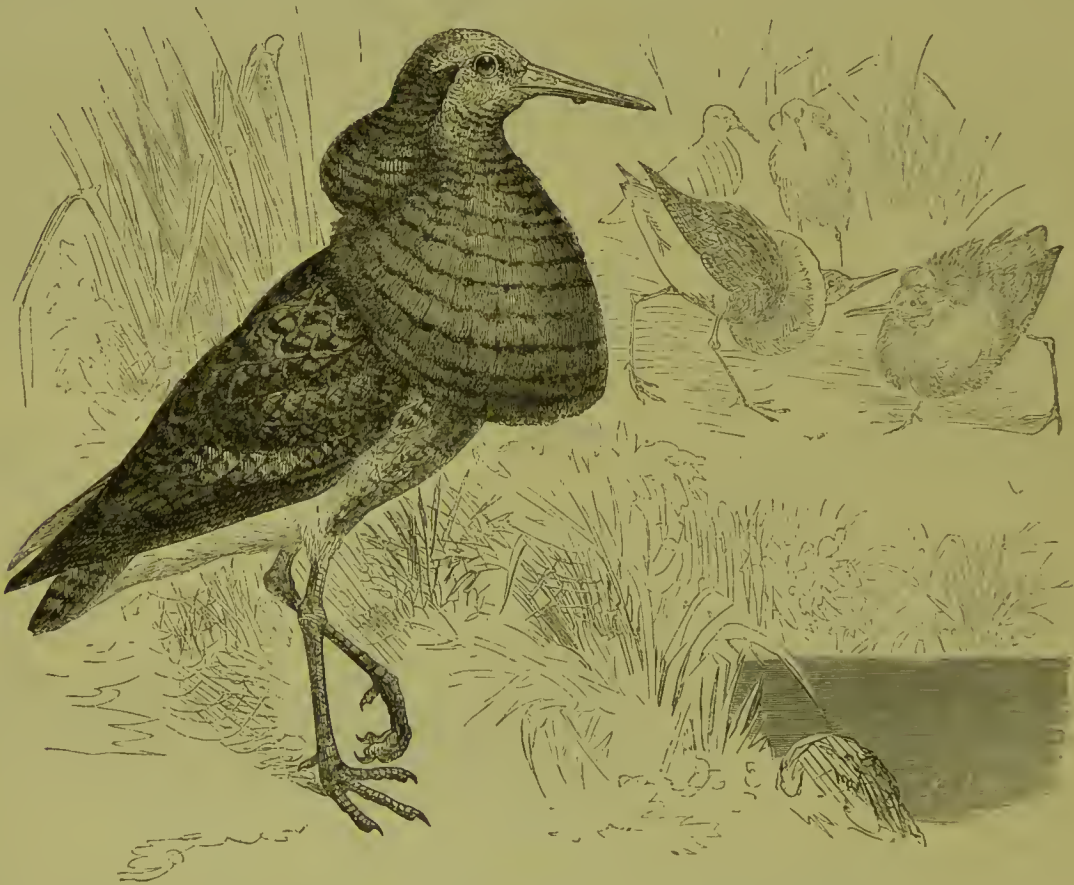
This species principally inhabits the northern portions of the globe, but during the course of its extensive wanderings is met with at certain seasons on almost every coast. In England it usually occupies the shores of the eastern and southern counties. During its migrations, which are carried on by night and in large flocks, it visits Egypt in vast numbers, and is frequently to be seen associated with a great variety of other species. Moist muddy coasts and shores are the situations it prefers, though it by no means avoids sandy localities. In disposition the Dwarf Sandpipers are lively and active, graceful and easy in all their movements. With their own kind they live in the utmost harmony, and exhibit but little fear towards man; in other respects they resemble the members of the family already described. It is probable that the Dwarf Sandpipers breed in the extreme north of Europe, but as yet their nests have only been found in Greenland and the most northern parts of the American continent. The four smooth glossy eggs are placed in a slight depression in the earth, and have a dull, greyish yellow shell, clouded with grey, and spotted and dotted with brown of various shades at the broad end.

THE RUFF.

The RUFF (*Philomachus pugnax*) has a straight beak of about the same length as the head, or a little longer, and slightly depressed at its tip; the high slender feet are bare, and furnished with four toes: of these the three placed in front are connected by a skin; the hind toe is short and much raised. The moderate-sized pointed wing has the first quill longer than the rest, and the short tail is slightly rounded; the plumage is soft and thick. The male bird is about a third larger than his mate, and has during the spring his face covered with warts, and his neck adorned with a strange and beautiful collar; both these peculiarities, however, disappear towards autumn. So varied and changeful is the coloration of the plumage, that a detailed description is almost impossible. The collar above alluded to is composed of harsh feathers, about three inches long, and so wonderfully different in their hues that scarcely two males are exactly like each other; black and brown, and white feathers of various shades, spotted, striped, and marked in every conceivable way, appear indifferently on this part of the plumage. The upper wing is deep brownish grey, and the blackish grey tail is spotted with black; the belly is white, and the rest of the body very variously coloured and marked. It has, we believe, been ascertained that each male exhibits the same hues and markings every succeeding year. The eye is brown, the beak generally greenish or greenish yellow, and the foot reddish yellow. This species is from eleven inches to twelve inches and a half long, and from twenty-three inches and a half to twenty-four inches across; the wing measures from seven inches to seven inches and a half, and the tail about three inches. The plumage of the female, which does not vary as does that of her mate, is principally reddish grey, darkly spotted upon the upper portions of the body. The face and brow are light grey, the crown is grey, striped with brownish black; the nape-feathers are grey, those on the back and shoulders blackish brown, edged with rust-red. The throat and gullet are grey, and the belly-feathers of a whitish hue. The female is ten inches long, and twenty-one inches and a half broad.

The Ruffs were originally natives of the northern portion of the Eastern Hemisphere, but are now occasionally met with in North America. During their migrations they not only visit every country of Europe and Asia, but the entire African continent, usually taking up their abode on extensive bogs or

marshy plains, and frequently appearing in the immediate neighbourhood of the sea, where they often mingle with the busy hosts that are ever ready to seize upon the rich and varied store of food left behind by the receding tide. Naumann asserts, however, that this species never remains near or ventures into the water, but after joining in the busy scene for a short time, always returns to its usual haunts. Unlike other Sandpipers, these birds are met with far inland, where they not only dwell upon the banks of rivers, but wander into the plains and cultivated districts. In Central Europe they usually arrive in flocks, about May, and begin to leave about July and August, travelling by night, and pursuing their course in long lines that sometimes assume a wedge-like arrangement, the males journeying apart from the females. The extensive parties seen by us in the Soudan consisted almost exclusively of



THE RUFF (*Philomachus pugnax*). MALE IN FULL PLUMAGE.

females, from which fact we concluded that the males do not often migrate so far south as Africa. The females are the first to seek and the last to leave the winter quarters, and yet strange to say, they generally return to their last summer's abode in company with their former mates. Before and after the breeding season, male and female are scarcely distinguishable, either in appearance or demeanour; but during that period the former exhibit an excitement that is quite without a parallel. Water insects, beetles, and worms, with seeds of many kinds, afford them the means of subsistence, and for these they seek principally at early morning or evening, visiting certain spots with great regularity, and keeping strictly within a limited hunting ground. Whilst thus engaged they move leisurely, and with conscious dignity, keeping steadily and quietly at work, and only betraying their presence by a weak hoarse cry, as they rise with light and hovering wing into the air. At the approach of night they become somewhat more lively, and indulge in sportive flights in company with their feathered brethren.

No sooner, however, has the period of incubation set in than the pacific disposition of these birds appears to undergo a complete change, and the males commence a series of fierce encounters, arising not merely from a feeling of rivalry or jealousy, but respecting such trifles as the possession of a worm or the choice of a resting-place. Whether in their native haunts or confined in a cage, and whether females be concerned in the matter or not, the same restless desire to attack and injure each other takes possession of the male birds, who, in their wild state, carry on their battles in regular fighting-grounds, employed year after year for the same purpose. Moist and rather elevated spots are



RUFFS FIGHTING.

usually preferred, and to these a certain number of combatants resort daily, each as a rule having his own peculiar place, whereon to take his stand till an enemy appears. Naumann states that until the collar of the males has attained its full beauty they are not privileged to appear in the lists. No sooner has a willing adversary come forward, than the excited couple rush upon each other, and struggle on till one or both are exhausted, when they pause and return to their former standing-places, to recover strength and breath for a second encounter. These strange battles are strictly duels, although from the fact of two or three couples engaging at the same time, and that often in such a limited space as to compel them to attack across each other, an ordinary spectator would often imagine that he was witnessing a general *mêlée*, instead of the entirely distinct settlement of individual wrongs and grievances. A more ridiculous sight could scarcely be imagined than the appearance of the

furious combatants, as they stand ruffling and swelling out their plumage, with collar and breast feathers erect, literally trembling with rage, and darting backwards and forwards towards their adversary; rapidly ducking their wart-covered heads, and keeping the hinder part of the body much raised, as they snap and probe the enemy in a very ecstasy of blind fury. At the conclusion of the fray, the combatants again stand trembling before each other, shaking themselves, and tossing up their heads in defiance; after which demonstration, if not too much fatigued, they resume their standing-places, and again look out for a willing and equally excited foe. Owing to the soft construction of the bill, serious injuries never result from these encounters; the loss of a few feathers, or the chance of being caught and pulled about by the collar, being the worst evils to which the apparently bloodthirsty duellists are exposed. Naumann is of opinion that the knobs and excrescences often seen on the beaks of the birds are attributable to blows or twists received in these violent affrays. Occasionally a female appears and takes up her post in the fighting-ground, but never does more than indulge her curiosity, by mingling with the combatants, and watching their proceedings for a short space; after which she retires, sometimes accompanied by one of the males, who, however, almost immediately returns to the field of action, without further reference to her proceedings. When the period for depositing the eggs arrives, the males separate, each in company with two females, or *vice versâ*, and make their nest of dry grass and stubble on some high point in a marshy locality. The eggs, four, or occasionally only three, in number, are of unusual size, with a greenish or brownish shell, more or less faintly spotted with reddish brown or pale black. The mother, who alone broods and hatches her young in from seventeen to nineteen days, is much attached to her charge, and in every respect conducts herself like a female Snipe; whilst her spouse does not concern himself in the least about the rising generation, but fights incessantly throughout the whole breeding season, after which he flies about regardless of his family, until the time comes for seeking his winter quarters. These birds are only summer visitors to England, appearing in April and taking leave in autumn; formerly, however, many Ruffs remained throughout the warm season, to breed in the fenny districts, and were caught in considerable numbers in Lincolnshire. Since the draining of the fens they have become comparatively scarce. Some years ago they were regularly procured and fattened for the table. Montagu tells us that he visited the room at Spalding where the captives were kept, and that his entrance drove them from their stands, compelling some to trespass on the premises of others, and thus producing many battles. "It is," he says, "a remarkable character of these birds that they feed most greedily the moment they are taken. No sooner is a basin of bread and milk put before them than it is instantly contended for; and so pugnacious is their disposition, that they would starve in the midst of plenty if several dishes of food were not placed among them at a distance from one another." The capture of these birds was formerly effected by means of clap-nets, with stuffed birds as decoys, placed around the hills where they assembled in the spring previous to incubation, and placed in such a manner as to be movable by means of a long string, thus producing a jerk resembling the jump so common among the Ruffs (who, at the sight of a wanderer flying by, will leap or flit a yard off the ground), and by that means induce those on the wing to alight.

The PHALAROPES (*Phalaropi*) possess a moderate-sized, delicate beak, which is slightly curved at its tip. In some species the bill is not broader than it is high, in others it is somewhat flattened in front. The weak low feet are bare, and furnished with four toes, of which the three anterior are united at the base, and more or less lobed on the sides as far as the tips; the hind toe is short, elevated, and margined slightly by a narrow membrane. The wing is long and pointed, with its first quill longer than the rest; the short rounded tail is composed of twelve feathers. In their mode of life these birds differ from all other members of the feathered creation. Their plumage is thick and

closely set ; and the toes being united at the base by a web, besides being bordered by a continuation of that membrane, make the feet efficient as paddles, although they are equally adapted for progression on dry land. The accomplishments of the Phalarope are, therefore, very varied—they fly rapidly, like the Snipes ; run, after the fashion of the Sandpipers ; and swim, not only with all the facility of Ducks, but venture out upon the surface of the ocean even in the midst of the roughest waves. During the breeding season they repair to the coast, where they build a neat nest, composed of grass and weeds, upon the sea-shore, or in some slight hollow on the ground. The eggs are four in number. The usual habitat of the Phalaropes is in the Arctic and Northern Seas, from whence they but rarely wander far, their migrations usually being confined to the surface of the ocean.

THE HYPERBOREAN PHALAROPE.

The HYPERBOREAN PHALAROPE (*Lobipes hyperboreus*, or *Phalaropus hyperboreus*) resembles the Sandpipers in some respects, but differs from them in the comparative shortness of its tail and slenderness of its beak. Upon the upper portions of the body the feathers are blackish grey, and on the lower back and shoulders black edged with reddish yellow ; the sides of the nape are rust-red, the throat and under parts grey, shading into white on the sides and crop. The eye is brown, the beak black, and the foot lead-grey, with the web and projecting edges yellowish and grey. The male is from six inches and three-quarters to seven inches long, and from twelve inches and two-thirds to twelve inches and three-quarters broad ; the wing measures four, and the tail two inches. The female is about a line longer, and one inch broader than her mate.

These birds inhabit the north-eastern portions of Europe and Northern Asia, and are numerous upon the extensive lakes and rivers of Siberia and North America ; their range, however, probably does not extend far south, even during the course of their migrations. With us they frequent the Orkney Islands, where they arrive about July, and depart again as winter approaches. In its habits this species is essentially aquatic. It swims with the utmost buoyancy and ease, though it is not known to dive even when hard pressed ; and, according to Audubon, indulges in the remarkable habit of alighting whilst at sea, even at a distance of one hundred miles from shore, on beds of floating seaweed, over which its lobed feet enable it to run with great lightness and rapidity. Its flight is strong and swift, but when on the ground its movements are inferior in agility to those of the *Tringas*. Insects, worms, and minute mollusca form its principal means of subsistence, these it obtains from among tangled beds of floating seaweed, or as it moves lightly over the surface of the water. The call is a sharp clear “tweet, tweet.” Audubon mentions having seen little parties of these birds living in pairs upon the small fresh-water lakes in Labrador, near which they also breed. The nest, which is usually made in a hollow in marshes, or on the islands of fresh-water lakes, is formed principally of grass, and covered with a few bits of hay or moss. The eggs, from one to four in number, have usually a dark olive-coloured shell, thickly spotted with black. The young grow rapidly, and are anxiously tended by their parents, who employ a variety of artifices to lure strangers from the nest.

THE RED PHALAROPE.

The RED PHALAROPE (*Phalaropus rufus*) represents a group of the above birds recognisable by their superior length of tail and the construction of the beak, which is as long as the head, and flat and curved at its extremity. This species is larger than the *Phalaropus hyperboreus*, being fully eight inches long, and nearly fourteen broad ; the wings measure five inches, and the tail two inches and three-quarters. Upon the crown, back, and shoulders, the feathers are black, edged with rust-red ; the lower back, upper wing-covers, and sides of the tail are dark grey ; and the under side is of a beautiful brownish red. The female is jet-black upon the crown and nape, and exhibits two greyish

black stripes which pass down the sides of the head, the back and shoulder feathers are bluish grey, darkly shafted, and those on the under parts of the body white, edged with grey at the sides.

The native haunts of these birds, according to Gould, are the regions within the Arctic Circle, where they live during summer, migrating as winter approaches to more temperate climes, and dispersing singly or in pairs throughout most of the countries of Europe, being especially numerous in the British Isles. This species is abundant in many parts of Asia and America. "Although its powers of wing are very great," says the above writer, "we cannot look for its periodical visits with any certainty; and the places, moreover, which it selects are sometimes very extraordinary. For instance, it will continue for weeks, if unmolested, about a puddle in a farmyard, manifesting a familiar and unsuspecting disposition, and allowing itself to be approached with freedom. It does not, however, confine itself to one spot, but after remaining at a certain place from three to four weeks, suddenly departs; if on the approach of spring, towards the north, and in autumn towards the south. Every European country is visited, though at uncertain and often long intervals." The Red Phalarope swims well, and takes its food in the surface of the water with the utmost agility and address; indeed it seeks its nourishment there alone, and whilst thus engaged displays a great variety of graceful attitudes and manœuvres. Even if closely approached it exhibits no fear, but quietly continues its search for the aquatic insects and small thin-skinned crustaceans on which it subsists. Audubon gives the following account of a large flock of these birds that he met with on the shores of the Ohio. "They swam beautifully and played lightly about as they picked up substances floating in the water, dispersed again and again, until at length coming opposite to a small sand-bar, stretching out from the shore to the distance of a few yards, they directed their course towards it, and waded out. When just landing they were so close to each other that I could not withstand the temptation, and so levelled my gun, pulled both triggers, and saw that I had made considerable havoc among them. Those which had not been hit flew in a compact body, while the birds that had been but slightly wounded made for the water and swam away so fast that they seemed to be running on the surface." The four eggs laid by this species have a stone-coloured shell, spotted and speckled with dark brown.

The LONGSHANKS (*Totani*) constitute a group possessing light slender bodies, moderately long necks, and small heads. The wings are long and pointed, with the first quill exceeding the rest in length; the short tail is composed of twelve feathers, and is either graduated, wedge-like, or rounded at its extremity. The beak is either as long as, or longer than, the head, and furnished with a pointed tip; this difference in the construction of the bill enables these birds to seize their food among gravel or stones on the shores of lakes and rivers, or on the coast, instead of seeking it by probing soft sand and mud. The foot is variously formed, being in some instances high and thin, and in others short and powerful; the toes are three or four in number. The short compact plumage, which is moulted twice in the year, is of sombre hue; male and female are almost alike, both in their coloration and size.

These birds principally frequent the northern portions of the globe, and from thence wander forth into warmer latitudes, where they not only live, but breed. River-banks, marshes, and the shores of fresh-water lakes, are their usual haunts; whilst some few occupy the sea-coast, and others frequent moist woods. During the winter they associate with many varieties of their feathered brethren, whose society they appear to prefer to that of their own species. They walk well, fly rapidly and easily, and for the most part dive with facility, remaining under water for a considerable time, and coming up at a distance from the place where they went down. While thus progressing they are supposed to move by the agency of their wings. Under ordinary circumstances, however, they merely stand while fishing,

keeping only their head and neck below the surface as they explore the ground beneath. In all the various species the voice is high, flute-like, and resonant. The food of the *Totani* consists of insects, worms, small molluscs, and fishes, and is obtained, not by probing the earth, a process to which their hard sharp bill is not adapted, but from the surface of the ground, or from amongst stones and gravel. Shortly after the snow has melted, these birds commence the duties attendant on incubation, and resort to their favourite fresh-water marshes or moist woods for the purpose of breeding. The nest, which is usually situated on the ground among the grass, is a mere depression, made smooth and neat within, and lined with grass or any similar materials. In some instances, however, the *Totani* build upon low trees, stones, or branches, either making a small abode for themselves with moss and other vegetable matter, or using a deserted nest as a repository for their young family. The large pear-shaped eggs are four in number, and have an olive-green shell, marked with brownish grey. The female alone broods, whilst her mate busies himself in anxious endeavours to protect her and her charge by flying around with troubled cries should they be disturbed. The young can leave the nest as soon as they quit the shell, and, if alarmed, at once conceal themselves with much adroitness upon the ground or in the grass. When fledged they usually fly about to very considerable distances over the country, until the season arrives for commencing their winter migration.

The TRUE SANDPIPERS (*Actitis*) are small, delicately-formed birds, with straight, flexible, but hard-tipped beaks; the moderate-sized, crescent-shaped wing is rather pointed at its extremity; and the long graduated tail composed of twelve feathers. The soft compact plumage is peculiar both in its coloration and markings, and varies but little at different seasons. The females are somewhat smaller than their mates.

THE COMMON SANDPIPER.

The COMMON SANDPIPER (*Actitis hypoleucos*) is of a yellow-brown on the upper portion of the body, shaded with green and purple, and marked with black. The feathers on the side of the crop are of a brownish hue, with shafts and oval spots of a deeper shade. Those on the under side are white; the primaries are brownish black, delicately bordered with whitish grey towards the tips, and from the third quill decorated with white spots, which gradually increase in size as they approach the body. The lower secondaries are pale blackish brown, with white roots and tips; the centre tail-feathers brownish grey, shafted with black, and spotted and edged with reddish yellow; the rest white, more or less striped with black. The eye is brown; the beak greyish black, with lighter base, and the foot lead-grey. The length of this species is from seven inches and three-quarters to eight inches, and from twelve inches and a half to thirteen inches broad. The wing measures four inches, and the tail two inches and a half.

The Common Sandpipers are abundantly met with on all the streams, lakes, and sea-coasts of the northern portions of both hemispheres, and both live and breed in the temperate latitudes, remaining in the latter from one year to another, while such as occupy the colder regions wander as far as Southern Europe and Northern Africa. Great Britain and Ireland are regularly visited during the summer by these birds, but they do not, we believe, resort to the Orkney or Shetland Isles. A correspondent, quoted by Yarrell, who writes from the vicinity of Clitheroe, says, "The Common Sandpiper breeds with us, and this year I started an old one from her nest at the root of a fir-tree. She screamed out and rolled about in such a manner, and seemed so completely disabled, that although perfectly aware that her intention was to allure me from her nest, I could not resist my inclination to pursue her, and in consequence I had great difficulty in finding the nest again. It was built of a few dried leaves of a Weymouth pine, and contained three young ones just hatched, and an egg through the shell of which the bill of the young chick was just making its way; yet, young as they

were, on my taking out the egg to examine it, the little things, which could not have been out of their shells more than an hour or two, set off out of the nest with as much celerity as if they had been running about for a fortnight.

The Common Sandpipers appear in Central Europe towards the middle of April or beginning of May, and by July have reared their young, and commenced flying about the country previous to leaving it, which they do about the second or third week in September. Their migrations are carried on in small parties of from six to twenty individuals, and take place at night; the birds descending, when day breaks, to seek for food upon a river-bank or similar locality, and usually sleeping for a few hours at noon. Should the chosen spot prove attractive, it is not uncommon for these parties to remain for several days before resuming their journey. Sandy localities, covered with bushes or reeds, are the favourite resorts of these birds; the latter affording a safe retreat in case of danger or alarm, to which their timid, cautious disposition renders them peculiarly susceptible. Naumann mentions that a garden-seat placed about four feet above the surface of a pond in his garden, and thickly overhung with branches and surrounded by bushes, was regularly selected as a sleeping-place by all the Sandpipers that crossed his grounds during their migrations. The movements of this species are in many respects unlike others of its kind; it stands erect, walks with an active tripping step, and constantly whips its tail while in motion. The flight is swift and easy, but, unlike that of most other Sandpipers, is seldom carried on at any great height in the air, the bird usually sweeping so close over the surface of the water as almost to wet its wings; only when finally quitting a spot does it rise far from the earth, and rapidly seeks another hunting ground. If much alarmed, it betakes itself to the water, and either swims or dives to a safe distance from the place of danger. Although remarkably shy, this species appears readily to distinguish those who are likely to molest it; and exhibits such adroitness in seeking concealment as frequently to escape even from the clutches of a Sparrowhawk. It seldom associates with other shore birds; and the breeding season once over, the pairs usually separate, and, like their companions, go their own way, only joining their fellows if the chosen spot be favourable for food, without any reference to each other's presence. As the season for incubation approaches, the male birds exhibit much excitement, and display themselves to the greatest advantage, darting through the air in zigzag lines, and trilling forth their call in the hope of attracting the attention of their desired mates. This call, which commences in a low tone, gradually swelling and dying away, is exchanged at other times for a high, clear, resonant, piping note. The nest is formed of twigs, reeds, stubble, or dry leaves, and is placed at a safe distance from the water, beneath a sheltering shrub or bush. The pear-shaped eggs vary somewhat in size and form, and have a delicate, glossy, reddish yellow shell, marked and spotted with various shades of brown. Both sexes brood, and exhibit great uneasiness when disturbed; should they be deprived of an egg they at once desert their post. The young are hatched in about a fortnight, but remain a little longer under the mother's wing, after which they are led forth to seek their own food, and in four weeks are fully fledged and self dependent. The parents display much anxiety for the safety of their little family, and, if molested, express their alarm by loud cries; whilst the young at once hurry to a place of concealment, and remain so quiet as to render their discovery almost impossible without the aid of a dog. Insects, larvæ, and worms form the usual fare of the Common Sandpipers, and in search of these they often display most amusing dexterity, gently approaching such active-winged prey as flies and gnats, with every sign of extreme caution, and then snapping up the desired morsels by an almost unerring stroke.

THE GREENSHANK.

The GREENSHANK (*Glottis chloropus*) represents a group distinguished by their long, slender, hard beak, which curves decidedly upwards, and their high green feet, which have the toes connected

by a skin. The species we have selected as a type of the rest is the largest of all, being from twelve to thirteen inches long, and from twenty-one and a half to twenty-two inches across the wings. The wing measures seven and the tail three inches. The feathers on the upper portions of the body are black, edged with white; the lower back, rump, and under side are pure white as far as the breast, which is striped and spotted with black; the tail is grey in the centre, and spotted white and black at its sides. During the autumn the head, nape, and sides of the throat are striped greyish-black and white, and the mantle-feathers deep grey, spotted and shafted with black, and edged with white; those on the lower web and crop are striped and shafted with black. The eye is brown, the beak blackish green, and the foot greyish green.

The Greenshank principally inhabits the northern portions of the Eastern Hemisphere, and from thence wanders as far as India, Southern China, and Africa. In Australia these birds are not seen, and it is still doubtful whether they visit the American continent. In some parts of Siberia they are remarkably numerous during the summer months. Such of this species as appear in Central Europe arrive about the end of July, and wander about over the face of the country till August or September, when they commence leaving in order to winter further south. In April and May they return to the north, travelling by night, and only rarely performing even a short part of the journey during the day. The Greenshank is a summer visitor to Great Britain, and is principally seen during its spring and autumnal migrations. "In the Hebrides," says Macgillivray, "it is met with in early spring, and generally departs in October, although I have observed individuals there in November. Previous to the commencement of the breeding season, and after the young are fledged, it resorts to the shores of the sea, frequenting pools of brackish water at the head of the sand-fords, and the shallow margins of bays and creeks. Its habits are very similar to those of the Redshank, with which it associates in autumn. It is extremely shy and vigilant, insomuch that we can very seldom shoot it unless after it has deposited its eggs. Many individuals remain during the summer, when they are to be found by the lakes in the interior; indeed, the number of them in Uist, Harris, and Lewis is astonishing. At that season it is very easily discovered, for when you are perhaps more than a quarter of a mile distant it rises into the air with clamorous cries, alarming all the birds in its neighbourhood, flies round the place of its nest, now wheeling off to a distance, again advancing towards you, and at intervals alighting by the edge of the lake, when it continues its cries, vibrating its body all the while. I once found a nest of this bird in the Island of Harris. It was at a considerable distance from the water, and consisted of a few fragments of heath and some blades of grass, placed in a hollow cavity scraped in the turf, in an exposed place. The nest, in fact, resembled that of the Golden Plover, the Curlew, or the Lapwing. The eggs, placed with their narrow ends together, were four in number, pyriform, larger than those of the Lapwing, and smaller than those of the Golden Plover, equally pointed with the latter, but proportionately broader, and more rounded at the larger end than either."

The high clear cry of this bird has been compared by Yarrell to the sound of the syllables "chio, chio." Insects, larvæ, young frogs, and small fishes are all devoured by the Greenshank; but it is at present undecided as to what may be regarded as its principal means of subsistence, nor are we much better informed concerning its habits during the period of incubation, except that it breeds in the north-eastern portions of the globe, and forms a slight nest of blades of grass, upon a green knoll, usually beneath the shelter of a tree. The four large eggs are deposited in June, and have a pale greenish yellow shell, marked with brownish grey and reddish brown spots of various sizes. The eggs of the Greenshank are regarded as among the greatest rarities of oological collections.

The GODWITS (*Limosa*) are recognisable by their large powerful body, moderate-sized neck.

and small head. The high slender foot is four-toed, and the wing long and pointed, with the first quill longer than the rest; the short, somewhat rounded tail, is composed of twelve feathers. The smooth thick plumage is of very uniform hue, and varies according to the season of the year. The birds of this sub-family have some resemblance to the Snipes, and also to the *Tringa*, but their legs are longer and somewhat stouter in proportion to their size. The chief difference, however, is in the bill, which in birds that as far as regards their haunts are such close neighbours, is the most important. The beak of the Godwits is very long, soft, and flexible; its whole length is rather compressed, and triangular at the base, depressed in the rest of the length, and dilated and obtuse at the tip. It has been described as, "not a snapping bill, nor a boring bill, neither is it a scooping bill, nor a dabbling bill; indeed, it is difficult to find a single epithet descriptive of the function it performs, or rather of the manner in which it performs its functions. It is not shovelling or scooping, for these birds do not remove from its place the sludge and sediment of the water among which they seek their food; and they do not dabble and wash the mud as Ducks do, till they find the substance of which they are in quest. 'Poking' is the nearest epithet, but does not express the action exactly, as they 'try about' and select their food by the sense of touch, and not by sight." These Godwits are more of a wading habit than the Snipes, yet their food is not found in the water, but in the ooze; and if the ooze is soft enough to be penetrated by the bill, the fact of its being with or without a small stratum of water over it is of little consequence. Their food consists chiefly of mud-worms, mud-insects, and mud-larvæ, and the places which they frequent are the localities in which these most abound. The banks of the eddies of slow-running streams, or the accumulation of sludge that is left bare in the estuaries and creeks upon the shores of low rich land, on the ebbing of the tide, and especially the streams of mud from the richer ground into the pools of fens, are the favourite resorts of these birds. They breed in the fens, at a considerable distance inland, if the ground is suitable, but they descend nearer to the sea in winter. In their inland haunts they hide themselves during the heat of the day among the long grass where they have their nests; but when near the sea, their resting-time varies with that at which the tide leaves their feeding-places in the best condition. Godwits run very fast, and make their escape to a considerable distance before taking wing, at which time they utter a very loud, harsh, and somewhat bleating note. These birds were formerly much more common with us than they are now, and were regarded by our forefathers as the daintiest dish in England. They were sometimes valued as high as four nobles the dozen, after they had been fattened for the market on bread and milk.

THE RED OR BAR-TAILED GODWIT.

The RED OR BAR-TAILED GODWIT (*Limosa rufa*) is on the crown and nape of a light rust-red, striped with brown. The feathers on the back and shoulders are black, spotted and edged with rust-red; those of the wing-covers grey with white borders. The rump is white, spotted with brown. The eyebrows, throat, sides of neck, and lower parts of the body are bright, dark rust-red; the sides of the breast and lower tail-covers spotted with black. The quills are black, veined with white; and the tail grey, striped with white. The eye is brown, the beak reddish, tipped with blackish grey, and the foot black. In the plumage of the female all these colours are duller. During the autumn the coat is principally of a greyish shade, the upper portions of the body being grey, spotted with blackish brown; the centre of the beak, rump, and lower tail-covers are white. This species is fifteen inches and a half long and twenty-six broad; the wing measures two inches, and the tail two inches and three-quarters.

Great numbers of these birds visit England both during their spring and autumnal migrations, but they have never been known to breed in our island, though some few remain throughout the winter. In Holland and the level parts of France they are far more common, and are annually killed

in great numbers for the London market. The Red Godwits are usually met with in small parties, and generally occupy the muddy banks of river mouths or the oozy shores of sea inlets, as such spots afford a rich supply of the worms, small molluscs, and aquatic animals upon which they subsist. In April the males acquire their full beauty of plumage, and at once retire as far north as Iceland, Lapland, and Sweden to breed. Upon the wing their movements are powerful, though not very rapid. If disturbed they utter a cry somewhat resembling the bleat of a goat. We are almost entirely without reliable particulars respecting the incubation of this bird.

THE BLACK-WINGED STILT.

The BLACK-WINGED STILT (*Hypsibates himantopus*, or *Himantopus melanopterus*) has a small slight body, slender neck, moderate-sized head, and a long, weak, straight bill, which is broad and soft at its base, rounded at the culmen, and curved at its slender tip; the high, weak, and unusually long foot is unfeathered, and furnished with three toes; these are connected by a short skin, and armed with small, slender, sharp claws. The long, pointed wings have the first quill very considerably longer than the rest; the medium-sized tail is composed of twelve feathers. The short compact plumage, which is of an almost fur-like texture on the under side, varies much in appearance, according to the season or age of the bird. In spring, the back of the head, the nape, and a narrow stripe across the mantle are black, the latter is shaded with green; the tail is ash-grey; and the rest of the plumage white, delicately tinted with rose-red on the fore parts of the body. In the female the hues are less clearly defined, and the white less pure; the tail is lustreless, and the dark stripe on the nape paler but broader than in the male bird. In winter the head and nape are of a greyish shade. The young have the under side greyish white, the nape grey marked with white, and the shoulder-feathers grey. In all the eye is of a beautiful carmine-red; the beak black, and the foot pale carmine or rose-red. This species is fourteen inches and a half long, and twenty-seven broad; the wing measures nine and the tail three inches.

The Black-winged Stilt inhabits Southern and South-eastern Europe, Central Asia, and Northern Africa; and during the course of its migrations visits India, the region of the large salt lakes in Central Asia, and the countries watered by the Upper Nile. In Southern Russia and Egypt it is remarkably numerous, and remains throughout the entire year; in Hungary it is also extremely common; whilst in Spain, Greece, and Southern Italy it only appears when journeying to or from its winter quarters. Such of these birds as occupy Southern Europe usually frequent the vicinity of extensive lakes, and lead a most retired life; but in Egypt, on the contrary, flocks numbering some two hundred or three hundred individuals, venture boldly into and about the villages, wherever small pieces of water are to be found, and allow a man to approach them within a few paces without any demonstration of alarm. These winter guests remain almost stationary throughout the cold season, and during that time become very fat. Towards April most of the flock disappear, while some few remain to breed. In England, according to Yarrell, this bird is an accidental though not unfrequent visitor. "On the 9th of June, 1822," says the Rev. R. Lubbock, "I was returning in the evening from fishing upon Hickling Broad, in Norfolk, when a bird of this species flew past the boat within thirty yards. The legs were extended behind, even more in proportion than those of a Heron; the wings were very much arched; the flight vigorous and regular. The colour and the length of limb made me guess what it must be. We searched for it early next morning, and found it precisely in the same place as the evening before, but it was standing in a shallow pool of water, mid-leg deep, apparently snapping at the insects as they buzzed around it."

Although the Black-winged Stilts cannot be regarded as sea-birds, they prefer salt water, and occasionally appear on the actual coast, in company with several of its regular occupants. Salt lakes

and ponds are, however, their favourite resorts, except during the breeding season, when they seek the vicinity of fresh or brackish water. These birds are eminently social in their habits, and usually live in small companies of from six to twelve individuals, only keeping apart in pairs during the period of incubation, and again assembling, but in large flocks, throughout the winter months. Insects of various kinds, principally flies, gnats, beetles, and larvæ, form their principal means of subsistence, and these they seize with equal address from the surface of the water, in the air, or from amidst the mud and slime. In Egypt this species breeds in April, and in May constructs a careless nest of coarse grass. Wilson tells us that a nearly-allied bird inhabiting America merely places a bed of dry grass upon the marshy ground to receive the eggs when first deposited, but afterwards constructs a regular nest of a variety of dry materials, which are heaped together till they frequently form a mass weighing two or three pounds. The eggs, which are generally four in number, resemble those of the Peewit in form and size, but have a far more delicate shell, of a brownish, olive, or greenish yellow, marked with grey and reddish brown spots of various shapes and sizes, which are most thickly strewn over the broad end. In Hungary the flesh of the Black-winged Stilt is eaten during the winter, but even at that season is not very palatable.

The SCOOPING AVOCETS (*Recurvirostræ*) are recognisable by their powerful body, moderately long, thin neck, large head, and long slender beak, grooved on its sides to the middle, and compressed towards its acute tip, which is curved either upwards or downwards. The margins are sharp and entire, the bill hard and smooth. The long slender tarsi are covered with scales; and the very long powerful foot furnished with four toes; the latter are sometimes united by a web in front, the hind toe being either extremely short or undeveloped. The long, pointed wings have the first quill longer than the rest. The short rounded tail is composed of twelve feathers. The plumage of the back is close and compact, and that of the under side of downy texture. These birds inhabit most countries of our globe, and frequent the swampy margins of rivers, or salt marshes, where they are usually seen in pools of shallow water, fluttering their wings, and shaking their half-bent legs, an action which causes them to appear as if they would tumble over, while at the same time they utter a sharp note like the syllable "click" often repeated. Occasionally they are seen collected in small groups, on open downs covered with grasses and other kinds of vegetation, when, if alarmed, they frequently run off in a straight line, or fly very close to the ground. Their mode of feeding is by scooping, or as it were beating the soft soil with their flat upturned bill; and when thus engaged they are generally seen wading up to their breasts in the pools left by the receding tide. They never swim voluntarily, although furnished with feet so extensively palmated as to have induced the early systematists to place them among the swimming birds; nevertheless, this structure is an admirable provision to enable them to traverse the soft and yielding mud in which they find their food. The nest is generally formed of dry grasses, seaweeds, and small twigs, heaped up to the thickness of several inches, and placed among thick tufts of grass, in the neighbourhood of shallow water. The eggs are four in number.

THE SCOOPING AVOCET.

The SCOOPING AVOCET (*Recurvirostra avocetta*) is black upon the top of the head, nape, shoulders, and a large portion of the wings; the rest of the latter and the remainder of the entire plumage is white. The eye is reddish brown, the beak black, and the foot greyish blue. In the female, these colours are less distinct; in the young the black feathers have a brownish shade, and those on the wings are edged with reddish grey. The upcurved bill of this bird is most remarkable, and entirely unsuited to probe the ground or break the shell of ordinary-sized molluscs. The slightest frost, therefore, drives the Avocet to the oozy muddy flats of estuaries, bays, and similar situations, where it can

patter about with its wide-webbed feet, and gather small crustaceans and sea-worms. Those who have seen a Stork or a Crane with a frog at the tip of its long mandibles, and watched it, as, with an upward movement of the head, it dropped the victim into its throat, will have a good idea of the action of the Avocet when it has captured a small shrimp, a marine insect, or any other of the objects upon which it lives, and at once perceive that, with such a peculiarly-formed beak, it could not feed in any other manner. The Scooping Avocets are numerous met with throughout the Eastern Hemisphere, even as far south as the Cape of Good Hope; in Central Europe they appear in April, and commence leaving again about September. A century ago, before the English fens were drained, they were common in the marshes of Norfolk and Lincolnshire; but are now rarely seen. These birds only frequent the immediate vicinity of salt water, and are almost exclusively met with on shallow muddy sea-coasts, or the slimy banks of brackish lakes. When occupying the shores, they follow the advance and recess of the tide in search of food, and are often seen half a mile out upon the sands when the waves have retired. Among the many varieties of sea-birds that frequent the sea-shore, the Scooping Avocets are always conspicuous, as they move slowly along, with body erect and slender neck gracefully curved, or fly rapidly through the air, with broadly-flapping wings, and their long legs stretched directly out. In the water they exhibit great skill, and frequently venture out to a very considerable depth. The piping note uttered by this species has a somewhat melancholy but not unpleasing tone, and is replaced during the period of incubation by a plaintive call, which is constantly and rapidly repeated. In disposition the Avocets are unsocial, and only rarely keep company with their feathered companions; whilst towards man they exhibit much timidity, and considerable intelligence in discerning such persons as are likely to prove dangerous. At the commencement of the season for incubation, the pairs seek a suitable spot whereon to breed, and usually prefer grass-covered flats, or fields, in the immediate vicinity of the sea. The nest is a mere hollow, slightly lined with dry blades of grass, or fibres, and contains from two to four pear-shaped eggs, about as large as those of the Peewit, with a thin, lustreless, greenish yellow shell, more or less marked with blackish grey or violet spots. Both sexes brood, and tend the young (which are hatched in about eighteen days) with great affection, leading them at first about the fields, then near large pools, and only venturing with them to the open sea when they begin to use their wings.

The CURLEWS (*Numenius*) are very beautifully-formed birds, with a slender body, long thin neck, small head, and a very long, slightly-curved, and soft beak, which is broad at its base, and horny at its tip. The upper mandible is a trifle longer than, and bends somewhat over, the lower portion of the bill; the slender, high, broad-soled feet are bare, and furnished with four toes, connected by a decided web; the wings are long and pointed, with the first quill longer than the rest; the moderate-sized tail is composed of twelve feathers. The close compact plumage does not vary in the sexes, or at different seasons of the year. The members of this group include about a dozen species, and are met with in almost every portion of the globe.

THE GREAT CURLEW, OR WHAAP.

The GREAT CURLEW, or WHAAP (*Numenius arquatus*), is from twenty-six to twenty-eight inches long (this measurement includes the beak, which is from seven to eight inches long), and from forty-five to forty-seven inches across the span of the wings; the wing measures from twelve to thirteen inches, and the tail from four inches and a half to five inches and a half. On the upper portions of the body the feathers are brown, edged with light reddish yellow, those of the lower back are white, spotted with brown, and those on the under side reddish yellow, shafted and spotted with brown. The quills are black, spotted and bordered with white, and the tail-feathers white, striped with brown. The eye

is dark brown ; the beak black, with a yellowish grey base to the lower mandible ; and the foot lead-grey. The young have in proportion to their size a shorter beak than the adult birds, thicker feet, and paler markings on the under side

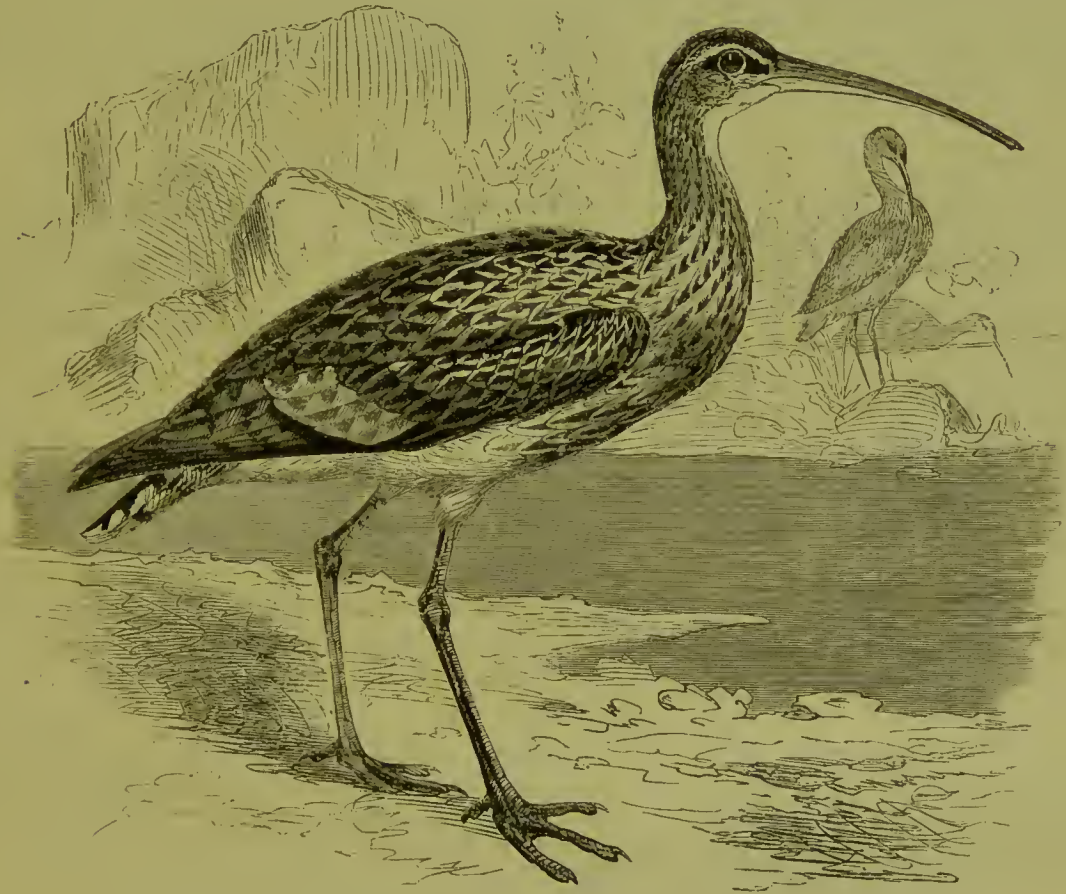
The Curlews inhabit both hemispheres, and breed principally in the northern portions of the globe, appearing regularly in Central Africa and India during the course of their migrations. According to Von der Muhle, they are occasionally seen in Greece and Spain throughout the year, but these are



THE SCOOPING AVOCET (*Recurvirostra avocetta*).

probably young stragglers that have not commenced breeding. In Great Britain these birds frequent all parts of the coast, feeding at low water, on worms, insects, and small crustaceans, left by the retiring tide, and visiting the adjacent fields when those feeding-places are covered. At the end of March or beginning of April they leave the shore and seek the higher moorlands to pair and rear their young. The Common Curlew, according to Jardine, "is entirely an inhabitant of upland moors and pastures during the breeding season, and in the soft and dewy mornings of May and June forms an object in their early solitude which adds to their wildness. At first dawn, when nothing can be seen but rounded hills of rich and green pasture rising one beyond another, with perhaps an extensive meadow looking almost boundless through the shadows and mists of morn, or a long string of sheep marching

off at a sleepy pace on their well-beaten track to some favourite feeding-ground, the shrill tremulous call of the Curlew to his mate has something in it wild and melancholy, yet always pleasing in its associations. In such situations do they pair, making almost no nest, and during the commencement of their amours run skulkingly among the long grass and rushes, the male rising and sailing round, or descending with the wings closed above his back, and uttering his peculiar quavering whistle. The appearance of an intruder requires more demonstration of his powers, and he approaches near, buffeting and 'whaaping' with all his might. When the young are hatched they remain near the spot, and are for a long time difficult to raise; a pointer will stand and road them, and at this time they are tender and well-flavoured; by autumn they are nearly all dispersed to the sea-coast, and have lost their clear



THE GREAT CURLEW (*Numenius arquatus*). ONE-QUARTER NATURAL SIZE.

whistle." In disposition the Curlews are extremely cautious and shy, and for this reason constantly associate with a variety of other shore birds, thus making as it were common cause against danger, and frequently almost driving the sportsman to despair, by the keenness with which they detect and proclaim his presence, whilst they constantly permit the near approach of such persons as they have reason to know will not molest them. The nest of this species is nothing more than a depression in the moss or grass, slightly lined with similar materials, and contains four large pear-shaped eggs, with a lustreless, dirty olive-brown shell, shaded with brown and green, and variously marked with blackish brown. The parents exhibit much attachment to their young, and probably relieve each other when brooding. Insects of all kinds, worms, mussels, small crustaceans and reptiles, fish, and many varieties of vegetable produce, especially berries, are all consumed by these birds, whilst the young are reared exclusively on insects. The Common Curlew is readily tamed, as the following interesting

account of a captive will show :—"This bird," says Montagu, "had been shot in the wing, and was at first so extremely shy that he was obliged to be crammed with meat for a day or two, when he began to eat worms ; but as this was precarious food, he was tempted to eat bread-and-milk, like Ruffs. To induce this substitution, worms were put into a mess of bread mixed with milk, and it was curious to observe how cautiously he avoided the mixture, by carrying every worm to the pond and well washing it previously to swallowing. In the course of a few days this new diet did not appear unpalatable to him, and, from being poor and emaciated, he got plump and in high health. In the course of a month or six weeks this bird became excessively tame, and would follow a person across the menagerie for a bit of bread or a small fish, of which he was remarkably fond. But he became almost omnivorous—fish, water lizards, small frogs, insects of every kind that were not too large to swallow ; and, in default of other food, barley with the ducks was not rejected. This very great favourite was at last killed by a rat, as it was suspected, after a short life of two years in confinement, but he had in that time fully satisfied our inquiries into his natural habits."

The HARD-BILLED WADERS (*Herodiæ*) are recognisable by their more or less powerful and slender body, which is very thin at its sides ; their long neck, small head, and strong, thick, high, and long beak, the upper surface of which is partially overspread with a horny coat ; occasionally the bill is broad at its extremity. The high long legs are bare and four-toed. The anterior toes being usually partially webbed, and always furnished with powerful claws ; the long wings are rounded, and the short tail composed of small feathers. The plumage is close and compact ; in some species the bridles, face, or neck are bare. The members of this group usually occupy marshy ground, or shallow pieces of water, and subsist upon crabs, various water grubs, and molluscs. The nests are placed upon trees or other raised situations. The eggs are white or blueish green, and occasionally decorated with faint spots.

The IBISES (*Ibides*) are comparatively small but powerfully-framed birds, with a long neck, small head, and a long rounded beak, which curves downwards in the form of a sickle, has the margins blunt, and the upper mandible grooved to the tip ; the long thin legs are furnished with moderate-sized toes, of which those placed in front are connected by a short skin, and furnished with narrow, pointed claws, the centre one of which is denticulated. In the long, broad, rounded wings, the second quill exceeds the rest in length ; the short broad tail is formed of twelve feathers, and is either rounded or incised at its extremity. The plumage is thick and compact. Some of the smaller species resemble the Curlews in their general formation, but differ from them in colour, and are entirely without markings on their feathers. Other species are distinguishable by the bareness of the face and throat, the prolongation of the nape-feathers, and other peculiarities. The sexes are almost alike, but vary their plumage somewhat at different seasons ; the young do not resemble the adult birds.

The Ibises occupy the warmer portions of the globe, only a few species appearing in temperate latitudes at certain seasons ; they usually frequent the banks of rivers, lakes, and swampy localities, in flocks which wade knee-deep in search of the frogs, water lizards, snails, and water insects, that afford them the principal means of subsistence. Some species, on the contrary, resort to plains and open dry tracts in search of worms and insects of various kinds ; while others take their stand upon the decaying trunks of trees as they float down the streams, in order to watch for the approach of fish, which they at once pounce upon and readily seize by means of their long beaks. The calls of hunger appeased, these birds generally resort to the most elevated and exposed branches of neighbouring trees, where they stand in an erect posture, resting their heavy mandibles upon their breast. In such situations they are extremely cautious and vigilant. Their flight is principally

performed in sweeps high up in the air, but when migrating at change of season, or wandering as they often do in search of food, they usually arrange themselves in two lines, diverging from a leader. All the various species are social in their habits, and live in company with many varieties of shore birds. Even during the period of incubation the same disposition is manifest, the flocks keep together, not only in their winter quarters, but throughout the breeding season; some few species, however, are exceptions to this rule, and separate in pairs whilst rearing their young. The nests are usually placed upon trees growing in the water or on marshy ground, and are formed of twigs, fibres, blades of grass, and similar materials; it is not uncommon, however, for the breeding pair to avoid all labour by taking possession of an empty nest. The eggs are from three to six in number, and have the shell of uniform hue. It is uncertain whether both parents assist in the task of incubation; they both, however, testify great anxiety for their offspring, and tend them even long after they have joined the rest of the flock. The young birds attain their full strength but slowly, and do not undertake the cares of a family until they are two and in some instances three years old.

The FALCINELS (*Falcinellus*) constitute a group of the above birds, possessing a slender body, moderately long neck, thin, curved, and long beak, medium-sized foot, and somewhat broad, rounded wings, in which the second and third quills are the longest; the tail is short, the plumage thick, and the face bare.

THE GLOSSY IBIS.

The GLOSSY IBIS (*Falcinellus igneus*), a European representative of the above group, is of a brownish red on the throat, breast, belly, legs, and upper portions of the wings. The crown of the head is dark brown, shaded with red; the back, tail, and quills are brown, with a green or violet sheen. The eye is brown, the bare circles around it greenish grey; the beak dull dark green, and the foot greenish grey. During the winter the head and throat are black, and the feathers lower down of a lighter shade, with white edges; those on the upper part of the body exhibit a mixture of copper-colour and green; the under side is brownish. This species is from nineteen to twenty-three inches long, and from thirty-five to thirty-eight broad; the wing measures from thirteen to fourteen inches, and the tail three inches and a half.

The Glossy Ibis frequents the whole of Central Europe, a large portion of Asia, and Northern Africa, and visits the central and western portions of the latter continent. During its migration, it is met with in India in large numbers during cold weather, whilst in Egypt it remains throughout the year. In Central Europe it arrives about the end of April, and leaves again from August to September. It is reported to have even visited Great Britain. "The Ibis," says Montagu, "is adopted as part of the arms of Liverpool, and formerly, if not at present, stood conspicuous on the Guildhall in golden array. It was termed the 'Liver,' from which that flourishing town derived its name, and is now standing on the spot where the 'Pool' was, on the verge of which the Liver was killed." Aristotle records that the Glossy Ibis, or Liver, was called "Leheras," or "Jeheras," by the ancient Egyptians.

River-banks, edges of large tanks, djeels, swamps, and inundated paddy-fields, are the favourite resorts of these birds, affording them a plentiful supply of the mussels, fish, small reptiles, and similar fare, for which they wade deep into the water during the winter months; whilst in summer, on the contrary, they subsist principally upon larvæ, worms, and insects of various kinds, seizing their prey with great dexterity, even when upon the wing. They roost at night in beds of large reeds, and fly in flocks, which move with remarkable regularity, and generally assume the form of a wedge. The loud call of the Glossy Ibis is often uttered in flight and when alarmed. It is now fully ascertained that these birds breed in Europe, and we have to thank Löbenstein for an account of their nests, as seen by himself in the Donautiefländer. These nests were situated in a reed-covered marsh, and placed on

willow bushes, usually at eight or ten feet from the ground. In many instances the nests, which were somewhat numerous, proved to be those of other birds, repaired and lined with straw for the reception of the young. The three or four oval-shaped eggs were about the size of those of the Domestic Hen, and had a thick, blueish green, or pale green, shell. The flesh of the Glossy Ibis is excellent.

THE SCARLET IBIS.

The SCARLET IBIS (*Ibis rubra*) resembles the species last described in most respects, with some slight difference in the construction of the wings and tail; in the former the third quill is larger than the rest: the face is bare. In the adult bird the plumage is of a uniform bright scarlet, only varied by the blackish brown on the outer web and tips of the quills; the eye is yellow; the beak brown at its extremity, with a flesh-red base; the bare broad bridles and the throat are of the latter colour; and the foot of a somewhat lighter shade. The length is twenty-four inches; the wing measures ten and the tail three inches. In the young the plumage on the back is pale brown, the under side of a whitish hue, and the beak yellowish; the bare face and legs are flesh-red. After the moulting, these colours are paler and greyer; and after the second moulting are exchanged for a pale rose-red, which, at each succeeding change becomes deeper, till it attains the magnificent scarlet of the adult bird. Central America and the northern portions of South America as far as the Amazon are the native haunts of this fine species, and from thence it wanders forth occasionally into the most southern of the United States. Edwards gives the following interesting account of a flock of these beautiful birds that he met with in a cane-brake near the forests bordering the river Amazon:—"In this part the Scarlet Ibis had nested, and the bended tops of the canes were covered with half-grown birds in their black plumage, interspersed with many in the brilliant scarlet plumage of the adult. They seemed little troubled at our approach, merely flying a few steps forward, and crossing the stream. Continuing our road, the flocks increased in size, the red birds became more frequent, and the canes bent over with their weight like reeds. Wood Ibises and Spoonbills were likewise numerous. The nests of all these filled every bit of ground where a nest could be placed; and the younger Ibises, covered with down, and standing like so many Storks, their heavy bills resting upon their breasts, and uttering no cry, were in strong contrast to the well-feathered Spoonbills, beautiful in their slightly roseate dress, and noisily loquacious. Their mode of feeding their young is remarkable. In the throat of the old female Ibis, directly at the base of the lower mandible, is a dilatation of skin forming a pouch, which is capable of holding the bulk of a small Hen's egg. She would return from fishing on the shallows with this pouch distended by tiny fishes, and allowed her young to pick them out with their bills."

The flight of this Ibis is lofty and strong, and it utters a loud and peculiar cry as it passes through the air. According to Sagra, this species breeds in December and January. The eggs, three or four in number, are laid upon the ground, and have a greenish shell. Schomburghk states that young and adult birds do not associate with each other, but unite in distinct bands. The Scarlet Ibis is sometimes domesticated, and accompanies the poultry, occasionally showing great courage in defending itself, not only from their attacks, but from those of cats. The flesh is generally esteemed as good food, and the rich and gaudy plumage is used by the Brazilians for various kinds of ornamentation.

THE WHITE, EGYPTIAN, OR SACRED IBIS.

The WHITE, EGYPTIAN, OR SACRED IBIS (*Threskiornis religiosa*, or *Geronticus Æthiopica*), represents a group having the head and neck bare, and the webs of the shoulder-feathers disunited or open, and loose at their extremities. The plumage is principally white, with a yellowish shade on the wings, and blueish black tips to the quills and shoulder-feathers. The eye is carmine-red, the beak

black, and the foot blackish brown. The bare black skin on the neck is of a velvety texture. In the young birds the head and throat are covered with dark brown and blackish feathers edged with white; the rest of the plumage resembles that of the adult bird. After the first moulting the young attain the streaming shoulder-feathers, but only exhibit the bare head and neck in their third year. This species is from twenty-eight to twenty-nine inches long, and fifty-one broad; the wing measures from thirteen to fourteen, and the tail six inches. This bird has been the subject of many strange tales from the most remote times, and is called the Sacred Ibis because it figures extensively, and



THE WHITE OR SACRED IBIS (*Threskiornis religiosa*). ONE-FIFTH NATURAL SIZE.

evidently in a religious character, on the hieroglyphics of ancient Egypt. It is not improbable that the estimation in which it was held arose from the fact that its annual appearance was coincident with the rising of the Nile, a phenomenon on which depends the prosperity of the whole country. According to our own observations, this species is now but rarely seen in Egypt, and was never met with by us below eighteen degrees north latitude; it, however, occurs regularly in South Nubia and the Soudan, where it arrives at the beginning of the rainy season, and after having reared its young, migrates, or wanders over the country to a considerable distance. In India it is not uncommon during the cold season. River-banks, marshes, tanks, and water-courses are the situations it usually frequents in search of aquatic insects, molluscs, and probably small reptiles, or it flies in small parties over the steppes in search of grasshoppers, beetles, and similar fare. This Ibis was formerly supposed to destroy and eat snakes, and the supposition appeared corroborated by the fact that

Cuvier actually discovered the remains of a snake within the body of a mummied Ibis ; recent specimens, however, seldom contain anything but molluscs and insects. Some seem to feed entirely on fishes and aquatic insects, of which they destroy far more than they can possibly consume ; and it is not uncommon for them, when tired of killing fish and fully satiated, to leave the rest to be devoured by birds of prey or some of the other frequenters of the water. When desirous of procuring food of this description, they walk with a slow firm step, and in large parties, through shallow muddy lakes, and when they have discovered a suitable and well-stored spot, they dance, as it were, all through it, stirring up the mud at the bottom with their feet. The victims as they rise to the surface are immediately struck with the long beak and deprived of life. In the course of a very short time hundreds of fishes, frogs, and reptiles cover the surface, and are greedily swallowed till the birds become perfectly gorged. We were fortunate enough to discover a breeding settlement on a small island in the White Nile, and found that the Ibises had built principally on the branches of a very thorny and thickly-foliaged species of mimosa, called by the natives "Harahri." The nests were flat, loosely constructed of thin twigs and grass, and placed close together on the densest branches. The three or four white coarse-shelled eggs were of about the size of those laid by the Domestic Hen.

The SPOONBILLS (*Platalea*) constitute a small group of very remarkable birds, possessing a powerful body, moderate-sized, strong neck, and small head ; the long almost straight beak is flat and spoon-shaped towards its extremity, its interior is grooved, and the upper mandible hooked and nail-like at its tip. The strong, medium-sized foot has the three anterior toes much webbed, and furnished with small blunt claws. The wings are large and broad, and have the second quill longer than the rest ; the tail is short, rounded, and composed of twelve feathers. The remarkably thick plumage does not vary either in the sexes or at different seasons, but changes its hue somewhat as the birds become older. The back of the head is adorned with a crest, and the upper throat is bare ; in some instances a portion of the crown is also unfeathered. The members of this group occupy almost every portion of the globe, and resemble each other very closely in their mode of life and habits.

THE COMMON SPOONBILL.

The COMMON SPOONBILL (*Platalea leucorodia*) has a portion of the throat bare, and the head adorned with a flowing crest. The plumage of this bird is entirely pure white, except a yellowish stripe around the crop. The eye is carmine-red, the beak black tipped with yellow, the foot black, the eye-ring yellowish green, and the throat greenish yellow. The female is smaller than her mate ; the young are without the yellow patch on the breast, and have no crest. This species is from thirty to thirty-one inches long, and fifty-two inches broad ; the wing measures seventeen, and the tail five inches.

Such of these remarkable birds as inhabit Central Asia remain throughout the entire year ; whilst those frequenting more northern latitudes arrive with the Storks about March or April, and leave about August or September. During the course of these wanderings, the British Islands are occasionally, but rarely, visited. As with the Ibises, the migrating flocks assume the form of two diverging lines, and usually travel in the day, resting from time to time in such localities as afford a good supply of food. The shores of rivers and lakes, marsh land, or slimy muddy spots upon the coast are the favourite resorts of the Spoonbill, and around these it is constantly to be seen stalking slowly, or wading with body bent and bill waving from side to side as it searches amongst the mud, or snatches from the water the fish, crabs, mussels, snails, small reptiles, and aquatic insects on which it mainly subsists. This bird, however, has a very decided preference for fish diet, and exhibits wonderful dexterity in disposing of the slippery prey, even if five or six inches in length, seizing

and turning them adroitly in its beak, and swallowing them head downwards. The entire day is passed in thus searching for food, with the exception of a short time devoted to repose at noon ; and at night it retires shortly after sunset to sleep upon the branches, only resuming its active labours at sunrise. Occasionally, but probably very rarely, it is seen at work till a later hour. The flight of the Spoonbill is beautifully light, and often performed in circles, or the bird assumes a hovering motion, and flies with neck stretched directly forward, making rapid strokes with its wings ; the voice is quaking, and only audible at a short distance. In disposition these birds are usually timid and cautious, but if not molested soon acquire confidence. With their own kind they live in the utmost harmony, and are constantly to be seen billing and arranging each other's feathers, with every demonstration of sympathy and affection. Even when excited by hunger they never actually quarrel ; and appear almost incapable of existing apart from their companions. During the breeding season the same social disposition is also manifested, regular settlements are formed, and as many nests as possible are placed close together on trees ; should the latter not be attainable, reeds are sometimes resorted to for this purpose. The nest is broad, and carelessly constructed of dry twigs and reeds, lined with leaves, rushes, or grass, and contains from two to four large, thick-shelled, and coarsely-grained eggs, of a lustreless, whitish hue, very variously spotted, and marked with pale reddish grey and yellow. Both sexes probably brood and tend their young with great care ; the latter remain with their parents until after their return from the winter migration, and do not commence the cares of a family till they are three years old. The Spoonbill is readily tamed if taken young, and soon accustoms itself to all kinds of nourishment ; in some countries it is still hunted on account of its flesh, which is not, however, particularly well-flavoured.

The BOAT-BILLS (*Cancromata*) comprise two strange species, the one occupying South America, the other a native of Africa, and both possessing a very remarkable and powerful broad high beak, a muscular body, moderately long, thick neck ; long, broad, rounded wings, in which the third and fourth quills exceed the rest in length, a moderate-sized, straight tail, and long toes. The soft thick plumage forms a crest upon the nape.

THE WHALE-HEADED STORK, OR SHOE-BEAK.

The WHALE-HEADED STORK, or SHOE-BEAK (*Balaniceps rex*), is recognisable by its great size, heavy body, thick neck, large head, and the peculiar form of its beak, which, in appearance, much resembles a wooden shoe. In this bill the grooved upper mandible curves slightly inwards, and terminates in a decided hook, whilst its lower portion is entirely covered with a leathery skin. The legs are very long ; the feet large, and the long toes furnished with very powerful claws ; the wings, which are broad and long, have the third and fourth quills longer than the rest ; the tail is of medium size, straight, composed of twelve feathers, and the head is adorned with a crest. The large-feathered, but soft plumage, of an ashy grey. All the body-feathers are edged with grey, and those of the tail and quills with greyish black ; the eye is light yellow, the beak horn-grey, and the foot black.

This remarkable species is extremely numerous on the marshy grounds and rain-beds near the White Nile and the neighbouring streams, and is especially common between five and eight degrees north latitude.

According to Mr. Petherick, who, in 1860, first brought the Shoe-beaks to England, they are but rarely seen on the banks of the Nile itself, as these, shelving off more or less abruptly, furnish few favourable spots for indulging their propensities. Although occasionally seen in the Bahr-il-Gagal, they prefer the natural banks of the morasses of the interior, where the shallowness of the water,

distributed over a large surface, affords them greater facilities for procuring food. They are usually seen wading about in pairs or parties, and, if disturbed, fly low over the water, and settle at no great distance; but if really terrified, or fired at, they rise in flocks, high into the air, and, after hovering and wheeling around, settle on the highest trees, and as long as their foes are in sight will not return to the water. Their roosting-places at night are said to be on the ground. Their food consists



THE SPOONBILL. (*Platalea leucorodra*). ONE FIFTH NATURAL SIZE.

principally of fish and water-snakes, which they have been seen to catch and devour. They will also feed on the intestines of dead animals, the carcases of which they easily rip open with the strong hook of the upper bill. Their breeding-time is in the rainy season, during the months of July and August; and the spot chosen is among reeds or high grass, immediately at the water's edge, or on some small elevated and dry spot, entirely surrounded by water. The bird, before laying, scrapes a hole in the earth, in which, without any lining of grass or feathers, the female deposits her eggs. As many as a dozen have been found in the same nest. "Numbers of these nests," says Mr. Petherick



THE WHALE-HEADED STORK, OR SHOE BEAK (*Baleniceps rex*).

"have been robbed by my men of both eggs and young ; but the young birds so taken invariably died. After repeated unsuccessful attempts to rear them, continued for two years, the eggs were eventually hatched under Hens, which were procured at a considerable distance, from the Raik negroes. As soon as the Hens began to lay, and in due time to sit, a part of their eggs were replaced by half the number of those of the *Balaniceps*, as fresh as possible from the nest, the locality of which was previously known, and several young birds were successfully hatched. These young birds ran about the premises of the camp, and, to the great discomfort of the poor Hens, would persist in performing all sorts of unchicken-like manœuvres with their large beaks and extended wings in a small artificial pool, constantly supplied with water by several negresses retained for their especial benefit. Negro boys were also employed to supply their little pond with live fish, upon which, and occasionally the intestines of animals killed for our use, chopped into small pieces, they were reared."

THE SAVAKU, OR BOAT-BILL.

The SAVAKU, or BOAT-BILL (*Cancroma cochlearia*), has a compact body, a comparatively short strong neck, thick flat-crowned head, and an extremely broad bill, which is longer than the head, much depressed and dilated towards its middle. The culmen is prominently keeled with a deep lateral groove, extending to the tip, which is acutely hooked ; the nostrils are placed in the lateral groove on the surface of the bill, their openings are longitudinal, and partly covered by a membrane. The moderate-sized, powerful wings have the fourth quill longer than the rest ; the short broad tail is composed of twelve feathers, and the long slender legs are clothed almost to the knee ; the soft streaming feathers upon the nape form a plume ; the cheek-stripes and a portion of the throat are bare ; the broad cheeks and fore part of the neck are white ; the lower neck and breast yellowish white ; the back is light grey ; the back of the neck and belly are reddish brown, with black sides ; the quills and tail-feathers are whitish grey ; the brown eye is edged with grey, and the brown beak has a yellow margin to the lower mandible ; the foot is of a yellowish shade. The male of this species is twenty-two inches long and thirty-eight across ; the wing measures eleven inches and a half, and the tail four inches and a half ; the female is somewhat smaller than her mate ; the plumage of the young is at first entirely reddish brown, with the back of a deeper colour than the under side.

This bird is an inhabitant of Brazil, where it frequents the reed or bush covered banks of streams, and lives either solitary, or, during the breeding season, in pairs, keeping principally amongst the thickest trees or bushes, and hopping nimbly from branch to branch. Water insects of all kinds probably afford it the principal means of subsistence, although the stomachs of specimens examined by the Prince von Wied only contained worms. We are unacquainted with the voice and other habits of this strange bird, except that it occasionally produces a clapping sound with its bill, after the manner of a Stork. The eggs of the Savaku are oval in shape, pure white, and lustreless.

THE HAMMER-HEAD, OR SHADOW-BIRD.

The HAMMER-HEAD, or SHADOW-BIRD (*Scopus umbretta*), is an African species, and represents a family possessing a compact, almost conical body, short thick neck, comparatively large head, and broad, much-rounded wing, in which the third quill is longer than the rest, and a medium-sized tail, composed of twelve feathers. The high beak is longer than the head, straight, compressed at its sides, and slightly bent at its tip. The feet are moderate, with toes but slightly connected. The head is decorated with a bushy crest, and the thick streaming plumage is of an almost uniform umber-brown, with the under side of a lighter shade. The quills are glossy and darker than the back, and the tail-feathers are enlivened by a broad, purplish brown band at their extremities, and narrow irregular lines of the same at their roots. The eye is dark brown, the beak black, and the foot either black or blackish

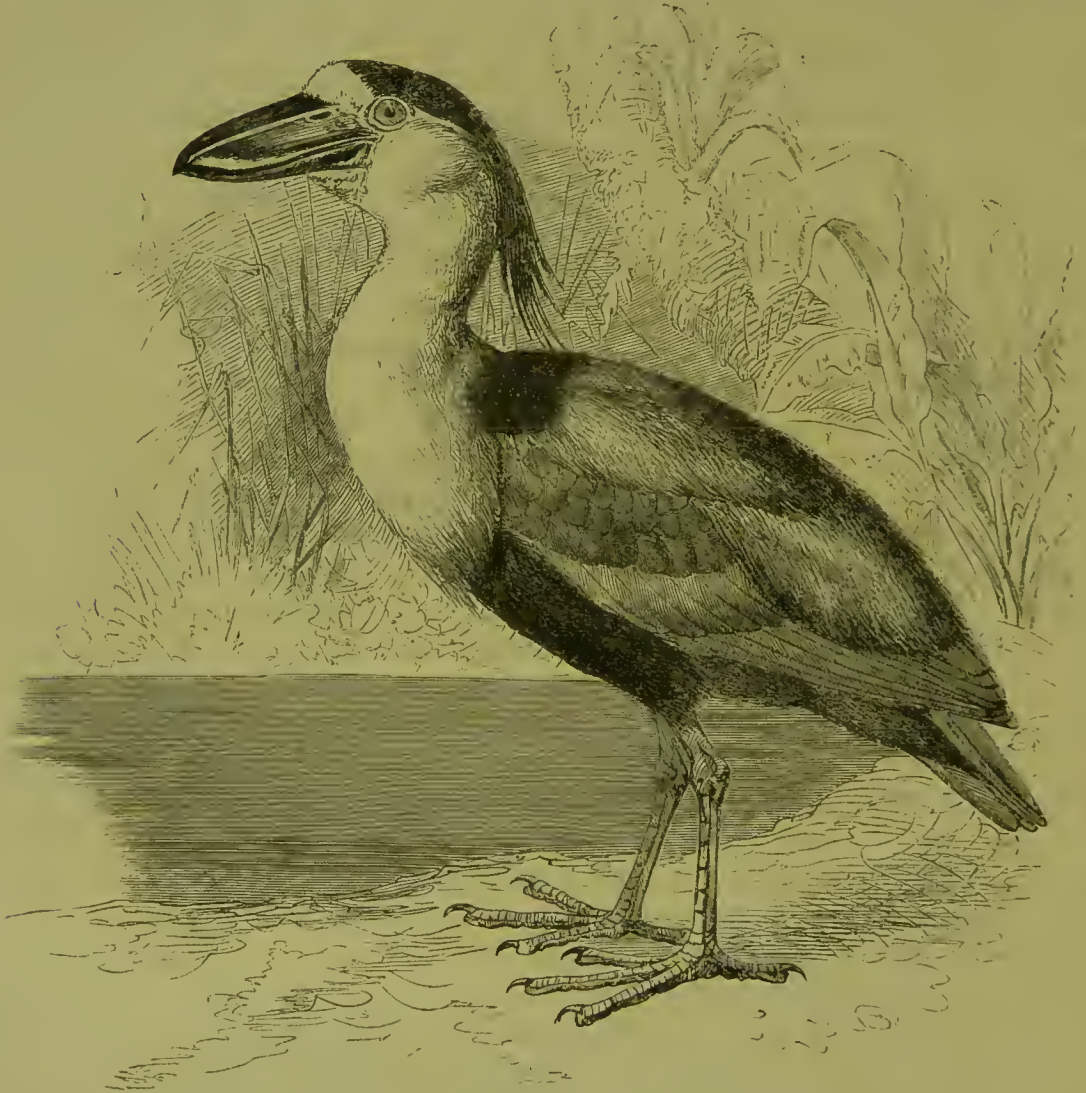
brown. The length is twenty and the breadth forty inches ; the wing measures eleven inches and two-thirds and the tail six inches. The female differs in no respect from her mate.

This remarkable species inhabits all the central and southern portions of the African continent, including Madagascar ; and is also met with in Southern Arabia, but is nowhere numerous.

“ The Hammer-heads,” says Layard “ are strange, weird birds, frequenting ponds, marshes, rivers, and lakes, flitting about with great activity in the dusk of the evening, and preying upon frogs, small fish, and similar fare. At times, when two or three are feeding in the same small pool, they execute a singular dance, skipping round one another, opening and closing their wings, and performing strange antics. They breed on trees and rocky ledges, forming a huge structure of sticks, some of them of considerable thickness. These nests are so solid that they will bear the weight of a large heavy man on the domed roof without collapsing. The entrance is a small hole, generally placed on the most inaccessible side. The pure white eggs are from three to five in number. On my late friend Jackson’s farm, at Nels Poort, there is a singular rocky glen between two hills. In this spot a beautiful permanent spring, called ‘ Jackal’s Fountain,’ takes its rise. Of course, in consequence, there are a few wild almond and other trees ; indeed, the place is a little oasis amid the barren mountains, and a favourite resort for hyænas, jackals, leopards, and other wild animals. On the ledges of the rocks in this secluded spot a colony of Hammer-heads have built for years. Some of the nests are quite inaccessible, whilst others can be reached with a little trouble. I counted six or eight within fifty yards, all exhibiting the same form and structure, and some of them containing at least a large cartload of sticks. About some that I visited I found brass and bone buttons, bits of crockery, bleached bones, &c. Mr. Jackson told me that if a ‘tottie’ lost his knife or tinder-box on the farm, or within some miles of the place, he made a point of examining these nests, and frequently with success ; the occupants, like the Bower Bird of Australia, embellishing their dwellings with any glittering or bright-coloured thing they can pick up. In the karroo between Worcester and Robertson I saw a nest placed on the ground on the side of a trifling rise ; it was at least three yards in length, by one and a half across, with a small entrance-hole at one end.” From Jules Verreaux we learn that these remarkable structures contain three distinct chambers, the partitions of which are carefully formed, like the outer walls, of twigs and clay most artistically worked together, and entered by a hole just large enough to admit the body of the bird. Of these compartments the hindermost is the largest, and so raised as to remain dry should heavy rain penetrate the outer parts of the nest ; so excellently, however, is the entrance constructed, that such accidents but rarely occur, or, if water should break through, are readily and at once repaired. The large back chamber is covered with a soft bed formed of various vegetable materials, for the reception of the eggs, which are hatched by the united attentions of both parents ; the centre apartment serves as a pantry, and usually contains a goodly supply of provender ; while the small outer compartment is employed as a guard-room, from which a strict watch is kept in case of approaching danger, the vigilant owner, according to Verreaux, lying flat on the ground as he reconnoitres, and keeping his head protruded through the entrance-hole. The young when first hatched are almost naked, with but a very slight development of greyish brown down. They grow slowly, and are tended with much affection by their parents, who feed them principally at early morning and evening.

The STORKS (*Ciconiæ*) are stoutly-built birds, with thick beaks, long legs, and short toes. The bill is long, straight, and conical, occasionally slightly curved upwards, and compressed towards its tip ; the legs are long, powerful, and usually covered with scales ; the toes are short : of these the inner and centre toes are only slightly connected, while the outermost and middle toes are united by a web as far as the first joint ; the claws are thick and stumpy. In the long broad wing the third

or fourth quill is longer than the rest. The short, rounded tail is formed of twelve feathers. In some species the head and throat are covered with long and narrow, and in others with short rounded feathers; in others, again, these are scanty, and either almost hairy in texture, or, as the birds increase in age, terminate in horny lancet-shaped points; the rest of the plumage, which is formed of large compact feathers, is occasionally glossy and beautifully coloured. All the various species have the region of the eye and throat bare, in some this bareness extends over the brow and cheeks. The sexes differ in size, and the young are recognisable by the comparative paleness of their tints.



THE SAVAKU, OR BOAT-BILL (*Canceroma cochlearia*). ONE-FOURTH NATURAL SIZE.

The Storks are met with in almost every portion of the globe, and are especially numerous in its warmest latitudes. Such as dwell in the north migrate or wander to a very considerable distance, whilst the occupants of southern countries are stationary. Everywhere they principally frequent flat marshy localities, or the vicinity of rivers and streams, occasionally appearing upon arid plains or cultivated ground in search of grasshoppers and other insects. Well-wooded districts are for the most part their favourite resorts, as they constantly select trees both for breeding purposes and as resting-places for the night; some few species, however, prove exceptions to this rule, and make their nests on roofs, chimneys, or other elevated situations in the immediate vicinity

of men. All the various members of this group exhibit much similarity in their mode of life and demeanour; they walk slowly and with a certain dignity, keeping the neck gently arched, wade deep into the water, though they rarely swim, and fly lightly, with neck and limbs stretched directly out, at a considerable distance from the ground. The almost entire deficiency of voice observable in these birds is supplied by a peculiar habit of clapping loudly with the beak when excited. Some species of Storks greedily devour carrion, and for this reason are regarded with much favour by man; while all subsist in a great measure upon fish, reptiles, young birds, small quadrupeds, worms, insects, and similar fare, and seek their food during daylight. The nests, which are of great size, are formed



THE HAMMER-HEAD, OR SHADOW-BIRD (*Scopus umbretta*). ONE-FIFTH NATURAL SIZE.

of dry branches, sticks, and such-like materials, lined with more elastic substances. The large eggs, which are of uniform hue and few in number, are hatched by the female alone; the male, however, is much attached to his young, and tends his mate with exemplary care.

The TANTALI (*Tantalus*) have a powerful beak, moderate-sized strong neck, and rather large head. The beak resembles that of the True Stork, but is thicker at its base, has its tip slightly hooked, and the margins turned roundly inwards. The tarsi are high and powerful, and the long toes broadly webbed; in the long broad wings the second quill exceeds the rest in length; the tail is short, and the plumage thick, soft, and beautifully coloured. The sexes differ in size, and the young do not

resemble the adult bird. These birds are usually classed with the Ibises, but in our opinion their proper place is among the Storks.

THE IBIS-LIKE TANTALUS.

The IBIS-LIKE TANTALUS (*Tantalus ibis*) is a most beautiful bird, with white plumage marked with deep rose-red on the wing-covers, and shaded with rose-red on the back; the quills and



THE IBIS-LIKE TANTALUS (*Tantalus ibis*).

tail-feathers are of glossy greenish black. The eye is yellowish white, the beak of a waxy yellow, the foot pale red, and the bare face cinnabar-red. The young are attired in a garb of yellowish grey, with throat and mantle of a darker hue. The size of this striking bird varies from thirty-four to forty inches, and its breadth from sixty-two to sixty-seven inches; the wing measures eighteen, and the tail six inches.

The Ibis-like Tantalus is an inhabitant of Central Africa, from which it occasionally but rarely wanders as far as Egypt or the coast. In the region of the Blue and White Nile, on the contrary, it is often numerously met with, and makes its appearance in company with the Ibis and Little House Stork, remaining in Soudan during the rainy season, and again disappearing. In

August the plumage of this bird displays its full beauty, and we may therefore infer that the period of incubation commences about September. River-banks, or the immediate vicinity of streams, tanks, and pools, are the localities it frequents, and in and about them it may be seen at morning and evening wading in search of fish, reptiles, and worms, or engaged in the capture of birds and small quadrupeds; about noon it resorts to the trees and sand-islands in large flocks, or takes its mid-day repose standing upright in shallow water. In all its movements the *Tantalus* closely resembles the Stork, but owing to its superior beauty of plumage, presents a more striking appearance when in the air. We are without any particulars respecting the nidification of this bird, but Jerdon informs us that a nearly-allied Indian species breeds in societies, and forms large nests upon high trees; the three or four eggs have a white shell, faintly spotted with yellow. Bodinus states that this bird has the very peculiar habit of fishing for prey with the bill wide open, as though it expected its victims to enter its jaws without further trouble; according to the same authority it is by no means a greedy feeder, and quite undeserving of its German name of the "Insatiable."

The TRUE STORKS (*Ciconia*) have a powerful broad-breasted body, rather long muscular neck, moderate-sized head, and a long conical beak, which has its margins turned decidedly inwards, and its entire surface covered with a horny coat. The legs are long and bare, and the toes short and broad; of these the centre and outer toe are connected as far as the first joint. The very long, broad, and rather blunt wings have the third, fourth, and fifth quills of equal length, and longer than the rest; the rounded tail is composed of twelve feathers, and the thick glossy plumage is of very uniform tint. These birds frequent the marshy districts of Europe, and seek their food principally on the banks of rivers, or in moist localities. Fishes, reptiles, and small birds constitute their ordinary fare; but they occasionally frequent dry open plains or cultivated grounds, in order to obtain grasshoppers, to which they are extremely partial, and a variety of other insects. Their huge nest, composed of sticks and twigs, is placed on buildings and tree-stumps. Occasionally these enormous structures, which are employed and repaired by many succeeding generations, are said to attain a height of four or even six feet. The female alone carries on the work of incubation, although her mate shares in her proverbial attachment to the little family.

"The Hebrew name for the Stork," says Dr. Tristram, "is derived from a root signifying 'kindness,' from the devoted maternal and filial affection of which the Stork has in all ages been held to be the type and emblem. This maternal instinct implied in the Hebrew name is repeatedly noticed by Greek and Latin authors, who believed further that the young repaid the care of their parents, by tending them in old age, and, contrary to the habits of all other animals, attended them through life. Though we certainly have no proof of this rather pleasing conceit, the devotion of the old birds to their offspring is very strongly displayed, and has been corroborated by modern observation. The Stork has a very ardent attachment to certain localities, and nothing but unrelenting persecution can drive it from a spot which has once been selected for a nest. Year after year—indeed, generation after generation—a pair of birds return every spring to the same place, and either rebuild or thoroughly repair their old nest. If any accident happen to one of the pair, its place is speedily supplied, and the succession of tenants maintained. The only instance of a breeding-place having been deserted which ever fell under my own observation was under curious circumstances. On the highest point of a large mass of ruin, at Rabbath Ammon, were the remains of a deserted pile of sticks, an old Storks' nest. One of the birds had got its leg entangled and broken in a chink of the ruin, where it had perished miserably, and its gaunt skeleton, with the pinion-feathers still remaining on the wing-bones, swayed to and fro suspended in mid-air, and had effectually scared all its fellows from the spot."



ADJUTANTS.

THE WHITE OR HOUSE STORK.

The WHITE or HOUSE STORK (*Ciconia alba*) has its plumage of a dirty white, with the exception of the quills and longest feathers on the wing-covers, which are black; the eye is brown; the beak bright, and the foot blood-red. This bird is forty-two inches long, and eighty-six across the wings; the wing measures twenty-five, and the tail ten inches. The female is somewhat smaller than her mate.



THE SIMBIL (*Spenorhynchus Abdimii*). ONE-FIFTH NATURAL SIZE.

The White Stork, though common in many parts of Central Europe, is now but rarely seen in Great Britain, and is met with during its annual migrations as far south as 13° north latitude. The multitudes of these huge birds which arrive in Palestine at certain seasons, and at once distribute themselves over the whole land, is truly startling, whilst in winter not one is to be seen. "On the 25th of March," says Dr. Tristram, "vast flocks suddenly appeared steadily travelling northwards, and leaving large detachments on every plain and hill. From that period till about the 4th of May they kept possession of the whole land, except where the ground was utterly barren, abounding specially in any marshy plains. They did not congregate like rooks, but like sheep or cattle scattered over a wide pasture; they systematically quartered every acre of the country, probably until they had cleared

it of all the snakes, lizards, and frogs they could find, when either scarcity, or the increasing heat of summer, reminded them of their northern homes, and they withdrew as suddenly as they had arrived, leaving behind them only a pair here and there at the established nesting-places. They were equally abundant on both sides of Jordan. On Mount Nebo they so covered the range that at first, and until we examined them through our telescopes, we took them for vast flocks of Moabite sheep pasturing. In the year 1858 I had observed them arrive on the 22nd of March, just two days earlier. Their halt in Syria agrees with the time of their arrival in Russia, which is said to be the beginning of May." In Holland and Denmark they arrive about the middle of April. In various parts of Holland the nest of the Stork, built on the chimney-top, remains undisturbed for many succeeding years, and the owners return with unerring sagacity to the well-known spot. The joy which they manifest on again taking possession of their dwelling, and the attachment they manifest towards their benevolent hosts, are familiar to everybody. In all countries where the Stork breeds it is protected; boxes are provided on the tops of the houses, and he considers himself a fortunate man whose roof is selected for their residence.

On the continent of Europe, indeed, the Stork is a welcome visitor everywhere, as its taste for offal and carrion renders it extremely useful; for this reason in many places it is regarded with great favour, and this kindly feeling is often carried to such a length as not only to subject a person ill-using it to unpleasant remarks, but to actual danger; indeed, in some parts it is looked upon as almost a sin to molest it. In consequence of being thus favoured, the Stork frequently becomes exceedingly tame, and may be seen stalking about the streets with the utmost confidence, and scarcely moving out of the way of a passer-by. These birds, according to popular belief, are not unmindful of the kindness shown them, and the eggs and young that are frequently found outside the nests are considered by the peasants to be tokens of their gratitude.

THE SIMBIL.

The SIMBIL (*Sphenorhynchus Abdimii*) is an inhabitant of Southern Africa, and represents a division of the above birds having the face bare. In this species the head and neck are greenish black, with a purple gloss, and the mantle-quills and tail black, shaded with green; the under side is white; the eye brown, the ring around it blue; the bare portions of the face and throat are red; the beak is greenish, tipped with red; and the foot brownish grey, with pale red joints. The length of the body is twenty-eight and span of the wings sixty inches; the pinion measures seventeen and the tail seven inches.

This bird is common in some parts of Central Africa, where it frequents the villages during the breeding season, and makes its nest occasionally upon the houses, but usually in the mimosa-trees in their immediate vicinity. The eggs are very various in shape, and smaller than those of *Ciconia alba*. This Stork is held in such regard by the natives as rendered it almost impossible for us to procure its eggs, and at last we only succeeded by affecting to require them as an ingredient in remedies for certain cases of illness. To have touched one on any less serious grounds would have been to rouse the whole village. The flesh of the Simbil is regarded by the colonists as excellent food. Layard tells us that an allied species, the *Ciconia nigra*, is extremely difficult to obtain, and puts all the sportsman's powers of woodcraft to the test in order to circumvent him; for if the bird be wounded, he proves no mean antagonist, striking fiercely with his sharp-pointed and powerful bill at the face and hands of his pursuers. "On one occasion," says that gentleman, "having only broken the tip of a wing with a long shot, I had to dispatch my bird with half a charge of dust-shot, so great was his resistance; he, moreover, as if aware of his greater chance, took to the water, and would not be driven from it."

The GIANT STORKS (*Mycteria*) are comparatively tall birds, with a slender body, long neck, and rather large head ; the very long beak is almost straight or very slightly curved, and furnished with a saddle-shaped cere at its base, and skinny knobs or appendages beneath. The tarsi are high, and the toes short ; the long and rounded wing has its third quill longer than the rest ; the tail is straight, and of medium length. The sexes are almost alike in size. The young are less brightly coloured than the adult birds. Of the three species of Giant Storks with which we are acquainted, one occupies Africa, another Australia, and the third South America ; these birds nearly resemble each other in their general appearance and habits.

THE SENEGAL JABIRU.

The SENEGAL JABIRU (*Mycteria Senegalensis*) is a large powerful bird, with the head, throat, upper wing, shoulders, and tail of a glossy metallic black ; the rest of the plumage is of dazzling whiteness. In the beak the upper mandible is of very pale tint for about three inches from its base, and the under one for about one inch and a half ; then comes a bar of black for about three inches, and from that to the end the bill is reddish, increasing in depth of colour to the bright vermilion tip. On each side of the upper mandible is a large semi-oval and transparent space, which at the back part is continued upwards in a curved direction across the fore part of the eyes and over the nostrils. Beneath the base of the bill, just at the beginning of the feathery part, are two very small, pear-shaped, pendent, yellowish wattles adhering by very small necks. The bare portions of the face are reddish, the eyes and eye-rings yellow ; the broad movable cere is also yellow, surrounded by a narrow border of black feathers. The tarsi are brownish grey, the knee and toe-joints dull red. This species is fifty-six inches long, and ninety-two broad ; the wing measures twenty-five, and the tail ten inches. In the young, all the dark parts of the plumage are brownish grey, and the under side dirty greyish yellow. Their eye is brown, and beak blackish red ; the appendages beneath the beak are not developed.

This fine bird is a native of Africa, where it principally frequents the regions watered by the White and Blue Nile, but is also seen in other parts of the continent. It lives in pairs, and occupies the shores of rivers, or the vicinity of lakes, tanks, and morasses, only quitting these for a short period during the rainy season ; occasionally, but very rarely, it is met with near shallow salt water. Upon the ground it moves with a certain stately grace, and, owing to its length of leg, appears taller than it really is. Whilst in the air its fine black and white pinions render it a most striking and beautiful object. Unfortunately for science, the Senegal Jabiru is so extremely shy as to render any close observation of its habits almost impossible. In the stomachs of such specimens as we examined, we found reptiles and beetles ; it also eats fish, and, according to Rüppell, has been seen upon carrion, but whether the bird was eating the putrid flesh, or merely gleaning off the insects that were feasting thereon, is at present uncertain. Gurney states that the pairs remain united for life, and entertain each other by a most strange dancing kind of performance. Should one of them die, the survivor does not soon mate again. It is probable that this species breeds on trees, and builds a nest resembling that of the Stork.

THE JABIRU.

The JABIRU (*Mycteria Australis*) has the head and neck of a deep glossy green, shading into purple and violet at the back of the head ; the large wing-covers, scapularies, lower part of the back, and tail are glossy green, tinged with a golden lustre ; the rest of the plumage is pure white. The beak is black, the eye deep hazel, and the leg bright red.

This species has a wide range over Australia, and at the time of its first colonisation was seen as near to Sydney as Botany Bay ; in the neighbourhood of the Hunter River, it is occasionally met

with, and is comparatively common in the vicinity of Botany Bay. Macgillivray and Gilbert also found it at Port Essington. The Jabiru frequents the vicinity of salt-water creeks, and obtains its food principally from the necks of land running out into the sea, or on sandbanks and morasses. It is very difficult of approach, and if pursued, hides amongst the dense reeds in the lagoons; the natives, we are told, steal upon it when reposing, as it frequently does, upon the tarsi, the bird taking some



THE SENEGAL JABIRU (*Mycteria Senegalensis*). ONE-SIXTH NATURAL SIZE.

time to rise from that position. In 1851, Dr. Bennett purchased a fine living specimen, which was brought to Sydney from Port Macquarie, and we have to thank that careful observer for the following interesting particulars respecting this remarkable and otherwise almost unknown species.

"The first evening it was at my house," says the above naturalist, "it walked into the hall, gazed at the gas-lamp which had just been lighted, and then proceeded to walk upstairs, seeking for a roosting-place; but not liking the ascent, quickly came down again, returning into the yard, and afterwards went to roost in the coach-house between the carriages, where it now retires regularly every evening

soon after dark. It may always be found in that part of the yard where the sun is shining, and with its face invariably towards it. When hungry it seeks for the cook, who usually feeds it; and if she has neglected its food, looks into the kitchen as if to remind her of the neglect, and waits quietly, but with a searching eye, during the time the meat is cutting up, until it is fed. It is amusing to observe this bird catch flies; it remains very quiet, as if asleep, and on a fly passing, it is snapped up in an



THE MARABOU (*Leptoptilos crumenifer*). ONE-EIGHTH NATURAL SIZE.

instant. There happened to be a pugnacious fussy little Bantam Cock in the yard, who would not permit the intrusion of any stranger; and on seeing the Jabiru he strutted up with expanded and fluttering wings and ruffled feathers, in a violent state of excitement, cackling and screaming most vehemently, and making efforts as energetic as so diminutive a bird was capable of to frighten, and drive him out of the yard. The Jabiru, with his keen bright eyes, regarded the little fluttering object with cool contempt, and walked about as before; the Bantam followed. At last the Jabiru turned and strode after the consequential little creature, as if to tread it under his feet, when the Bantam seeing

matters take this turn made off as fast as possible, like all little bullies, and did not again venture to attack so formidable an opponent. In a few days the Jabiru became quite domesticated among the poultry.

He was occasionally fed upon fish cut up into small pieces, which he beat about with the mandibles, and after continuing this process for some little time, swallowed them. "I have," continues Dr. Bennett, "noticed him watch the ground very attentively under the trees, and then dart his bill into the earth and bring up larvæ, which I found were those of locusts (*Tettigoniæ*). When the bird observed a slight motion of the ground, he darted his beak down, and devoured the insect as it was emerging from the soil. He became latterly very familiar. When called to be fed, he ran from any part of the yard, clapping his long mandibles." Unfortunately, this rare bird sickened, and refused food for several days, avoided the open air, and was at last found dead in the stable. His skeleton is in the Osteological Collection of the British Museum.

The ADJUTANTS, ARGALAS, or MARABOUS (*Leptoptilos*), are at once recognisable by the pouch-like appendage on the lower part of the neck, their clumsy body, thick bare neck, scabious head, more or less covered with a few downy feathers, and their huge beak, which is very thick, four-sided, and almost conical in front. Their legs are long, wings strong and rounded, with the fourth quill longer than the rest; the tail is of a medium size, with the feathers of its lower covers extraordinarily and beautifully developed. These birds inhabit South Asia and Central Africa, and render most important service to man by clearing off a host of unclean and putrid substances, that would otherwise pollute the air and constantly breed disease and death in those hot regions.

THE AFRICAN MARABOU.

The AFRICAN MARABOU (*Leptoptilos crumenifer*) has the flesh-coloured head sparsely covered with short hairy feathers, and the neck bare. Upon the mantle the plumage is of a glossy, metallic, dark green, and white on the under side and nape; the quills and tail-feathers are black and lustreless; the larger feathers of the covers are edged with white on the outer web. The eye is brown, beak dull whitish yellow, and the foot black. This huge bird is generally about five feet long; of this the bill measures a foot and a half, and the tail one foot. The span of the wings is ten feet, and the length of the pinion twenty-eight inches. Mr. Smeathman, who had many opportunities of observing this species, states that an adult often measures as much as seven feet, and the head being covered with thin whitish down, it has at a distance much the appearance of a grey-headed man. "These birds," he says, "are met with in companies near the mouths of rivers, and as they advance with extended wings, might readily be mistaken for canoes, or, when on the banks, for persons picking up shells." A young Marabou about five feet high was brought up tame, and presented to the chief of the Bananas, where Mr. Smeathman lived. Being fed in the great hall, it soon became quite familiar, and duly attended at dinner-time, placing itself behind its master's chair frequently before the guests entered. The servants were obliged to watch it narrowly, and to defend the provisions with switches; but in spite of these precautions it would frequently snatch something from the table—a whole boiled fowl, for example—which it devoured in an instant.

THE INDIAN ADJUTANT, OR ARGALA.

The INDIAN ADJUTANT, or ARGALA (*Leptoptilos argala*), a nearly-allied species, is very common in some portions of Northern India, especially Bengal and the North-eastern Provinces, where it arrives in April or May, and departs in October, a few unpaired birds only remaining behind in the south. Jerdon tells us that it soars with the Vultures to an immense height, ready to descend on any carcase

that may be discovered. In Calcutta and other large towns, the labours of these birds are regarded as so important that they are protected by law, and become so tame as to be seen walking familiarly about the town, lurking about the slaughter-houses and burning-grounds of the Hindoos, or examining the heaps of refuse accumulated in the streets, ready to be carted away by the scavengers. They do not, however, rely entirely on this highly-flavoured diet, but forage in the tanks and ditches for frogs and fish. During the heat of the day they retire to trees or house-tops, where they may be seen resting on the whole tarsus. The nests are made about rocky cliffs or occasionally on lofty trees, away from hills. The white eggs are two in number; when first hatched the young are covered with white down. The Hindoos have a popular superstition that if the head of an Adjutant be split whilst the bird is still alive, the celebrated stone called the *tahir mora*, or "poison-killer," will be discovered. This stone is supposed to be an antidote for all kinds of poisons. The soft and beautiful feathers on the under tail-covers of this and allied species form a well-known and valuable article of commerce; and to obtain these, in many parts of India the birds are kept in flocks about the villages. We are told that there is a popular idea in India, that the souls of the Brahmins possess these birds. They are thought invulnerable; and when Mr. Ives missed his shots at several, the standers-by observed with great satisfaction that he would never succeed in wounding them.

The CLAPPER-BILLED STORKS, or SHELL-EATERS (*Anastomus*), inhabit Africa and Southern Asia. These most remarkable birds have a comparatively slender body, covered with short thick plumage, the head is small, the wing large, broad, and pointed, with its second and third quills longer than the rest; the short tail is composed of twelve feathers. The thick beak has its margins slightly incised, and the mandibles so formed that they only close together at the base and tip of the bill. The foot resembles that of the Stork, and the plumage is close and compact.

THE AFRICAN CLAPPER-BILL, OR SHELL-EATER.

The AFRICAN CLAPPER-BILL, or SHELL-EATER (*Anastomus lamelligerus*), is about the size of the Common Stork—that is, thirty-three inches long. In this bird all the feathers on the neck, belly, and legs are tipped with narrow horny little plates; these plates and the feather-shafts have a green and purple gloss. The eye is reddish, the bare bridles and throat yellowish grey, the beak yellowish, and feet black. The young are without the horny plates at the tips of their feathers, and are principally of a brownish grey. This Shell-eater is a native of Central and Southern Africa, and is met with in large flocks on the shores of the Blue River. We are unacquainted with its habits, except that it consumes fish, frogs, and molluscs of various kinds. Jerdon, however, tells us that the *Anastomus osculans*, a nearly-allied species, which is common in all the marshy districts of India, subsists entirely upon shell-fish. "I was formerly of opinion," says that writer, "that the open space between the mandibles was mainly caused by a process of training a Bhyri, and these, as is usual, had their eyes sewn up, to prevent their struggling or fluttering. To feed them the falconer had a quantity of the large *Ampullaria* brought, which were placed before the captive and blinded Shell-eaters. The bird secured a shell by its feet, and after sundry alterations of its position, succeeded in cutting off the operculum as cleanly as if it had been done by a razor, but so rapidly that I was unable to see the exact way in which it was accomplished. It then inserted the tip of its beak into the open mouth of the shell, and after working it about for a short time, pulled out the entire shell-fish, almost to its utmost tip." These birds are sometimes caught by means of a bamboo with a noose attached; this is bent down, and fixed tightly to the ground by a small peg, to which an *Ampullaria* is fastened. The Shell-eater, while hunting about, soon finds the shell, and in moving it to get at its contents the peg is withdrawn, the bamboo flies up, and the noose catches the bird, which remains dangling in

mid-air. The Indian Shell-eater breeds upon high trees about June or July, and associates in large flocks during the whole period of incubation. The eggs are four in number, and are of a dirty white. The young are defended by their parents with great courage and fierceness.

The HERONS (*Ardeæ*) are large, ungainly birds, with a weak body, much compressed at its sides, a long thin neck, and small, narrow, flat head. The strong straight beak is as long as, or



THE AFRICAN CLAPPER-BILL (*Anastomus lamelligerus*). ONE-FIFTH NATURAL SIZE.

longer, than the head, compressed at the sides and culmen; the sharp margins are turned inwards, the tip is incised, and in its entire surface, except in the region of the nostrils, covered with a hard, smooth, horny coat. The legs and toes are moderately long, the claw of the centre toe being curiously denticulated on its lower side. The long, broad, blunt wing has its second, third, and fourth quills of almost equal length; the short rounded tail is composed of from ten to twelve feathers. The thick, soft, lax plumage is often much prolonged on the crown of the head and upper breast; and though strikingly and very variously coloured in the different species, is never remarkably gay. The Persians, however, catch these birds, and after depriving them of the long feathers, which are highly prized, suffer them to depart. These feathers, together with tufts of diamonds and other



HERON, YAMAYA — SUPAPHO BEAN.

precious stones, set in the form of Heron's plumes, adorn the *dhul bandt* of the Persian monarch. The members of this group are met with in most parts of the globe, migrating according to the change



GROUP OF HERONS.

of seasons, or when their supply of food falls short. Swamps, shallow rivers, and pools are their favourite haunts, and in these they quietly stand, with their necks drawn down between their shoulders, watching the approach of a fish, upon which they suddenly dart, and seizing it in the beak, swallow it in an instant. They also consume small quadrupeds, frogs, and a variety of insects. Some species

have been seen perched upon the backs of cattle, and feeding upon the larvæ that infest their hides. The nest of the Herons, which is usually erected on lofty trees, on elevated buildings, or among the tall reeds and river-banks, is constructed of sticks, lined with small twigs, and so loosely put together as to form a large flat expanse.

THE COMMON HERON.

The COMMON HERON (*Ardea cinerea*) represents a group possessing a thin body, long neck, long powerful beak, and plumage of more or less sombre appearance. In the adult birds the crown and brow are white, the neck greyish white, the back ash-grey, varied by the white of its long feathers; the sides of the lower parts are black; a stripe from the eye to the nape, three long crest-feathers, a threefold row of spots on the front of the neck, and the large quills, are all black; and the upper secondaries and tail-feathers grey. The eyes are golden yellow, the bare patches on the face greenish yellow, the beak is straw-colour, and the foot brownish black. This species is forty-two inches long and seventy-five broad, the wing nineteen and the tail seven inches. The young are greyer than the adults, and have no crest.

Owing to the large size of their wings, these Herons are enabled to support themselves in the air with but little exertion, and can mount without fatigue to a great height when pursued by their natural enemies the Falcons. This Heron is a successful fisher, and might be taken as a very picture of patience as it stands, motionless as a statue, up to its knees in water, with neck slightly extended and eye steadily fixed, but fully awake to the slightest movement. Suddenly its head is darted forward with unerring aim, a small fish is captured and instantly swallowed, head foremost. An eel of some size is brought to land and beaten to death on the bank, and a large fish impaled on the bill, if worth the labour, is carried to a safe retreat and devoured at leisure. A frog is swallowed whole, and a water-rat is usually killed by having its skull split open. The Heron devours shrimps, small crabs, newts, and a variety of water-beetles, in large quantities. Should the fishing at a selected spot be unsuccessful, the bird rises a few feet into the air and slowly flaps its way to a little distance, where, standing on one leg, with its head thrown back, it awaits better fortune. Whilst on the watch it is silent, but as it flies off utters its harsh grating scream. A great portion of the day is passed on the branches of lofty trees, whither these birds often repair with a booty too large to be disposed of at once. During the winter Herons live solitarily, but in the month of March begin to congregate and soon after repair to their breeding-places, called heronries. These are generally situated in stately clumps of trees or groves, and were formerly so favoured that a fine of twenty shillings or three months' imprisonment, or the suretyship of two persons, bound in twenty pounds each, was the penalty for killing one of their feathered occupants. No Herons were allowed to be taken (out of a man's own premises) except by hawking or shooting with the long-bow. For taking the young out of the nest a fine of six shillings was imposed, and for taking or destroying the eggs from the 31st of March to the 30th of June a man was subjected to imprisonment for a year, besides having to pay eightpence for every egg.

Pennant counted more than eighty nests upon one oak at Cressy Hall, near Spalding, Lincolnshire, an estate then belonging to the Heron family, one of the most ancient in this county. Sometimes Herons build on steep rocks near the coast. Although the favour bestowed upon these birds in former times has ceased, there still exist many heronries in different parts of England, and also of Scotland. On the eastern coast they may be met with in great numbers after the breeding season is over; and an observer in the neighbourhood of Stonehaven, writing to Mr. Macgillivray, says:—"In autumn, when they appear to be most numerous, I have seen one hundred or one hundred and twenty or more together, their numbers being made up probably in a great measure from young birds of the year. When disturbed they betake themselves round some corner of the rocks to a neighbouring bay, flying heavily along, generally within gunshot of the water's surface.

During high tide they rest on detached rocks, at a short distance from the land, and occasionally on the face of some of the heughs, or high sandbanks." "Once or twice," says the same correspondent, "I have seen them in the fields. I recollect one forenoon seeing four of them standing in a ploughed field, in most grotesque attitudes, reminding one more of a consultation of witches than of anything else."

The nests of the Herons are huge masses of sticks, about a yard across, lined with a little grass



THE GIANT HERON (*Ardea Goliath*). ONE-SIXTH NATURAL SIZE.

or other soft materials, and are placed close to each other. Each nest contains four or five eggs, on which the female sits constantly for three weeks, and is meanwhile fed by her mate. The young are quite helpless till they are sufficiently fledged to perch on the branches, where they receive nourishment from their parents. Herons, according to Layard, are very abundant throughout Southern Africa, in all suitable localities, feeding upon fish, frogs, and an occasional snake. "I am told," says this observer, "that they breed on the Cape Flats, placing their nests in company on tufts of grass and rushes, surrounded with water. This seems very different from their European practice, but there is no reason to doubt the word of my informant.

THE GIANT HERON.

The GIANT HERON (*Ardea Goliath*) is a powerful bird, of about fifty-two inches long and seventy-one inches broad; the wing measures twenty-one and the tail eight inches. Upon the head, upper neck, centre of breast, and belly, the plumage is brownish red; the back and upper breast are



THE GREAT WHITE HERON (*Herodias alba*). ONE-SIXTH NATURAL SIZE.

dark grey, and the throat and gullet white; the eyes are yellow, the eye-rings violet, and the bridles green; the upper mandible is black, and lower one violet tipped with greenish yellow; the foot is black. This species leads a solitary life upon the shores of the fresh-water lakes and streams of Central Africa. In disposition it is extremely shy; it flies badly, has a harsh loud voice, and subsists upon fish, reptiles, birds, and small quadrupeds. In other respects it closely resembles the *Ardea cinerea*. We are entirely without particulars respecting its habits.

The WHITE HERONS (*Herodias*) possess a slender body, long neck, and a comparatively weak bill. Their pure white plumage is adorned with long streaming feathers on the back during the period of incubation.

THE GREAT WHITE HERON.

The GREAT WHITE HERON (*Herodias alba*) has the entire plumage of pure and dazzling white.



THE LESSER EGRET (*Herodias garzetta*). ONE-FOURTH NATURAL SIZE.

The eye is yellow, and the beak dark yellow; the bare cheeks are greenish yellow, and the feet dark grey. This species is forty inches long and seventy-two broad; the wing measures twenty-one inches, and the tail seven inches and a half. The beak changes colour, not according to the age of the bird, but at different seasons of the year. The young do not exhibit the streaming feathers on the back. This Heron inhabits the southern parts of Siberia and South-eastern Europe, and during its migrations appears in South Asia and North Africa. In India, and South and Western Africa, it is replaced by a very similar species. In England it is occasionally but rarely seen. Like its congeners, this beautiful bird occupies marshy ground in the vicinity of water, preferring such spots as are least frequented by man, and subsists upon the same fare as other members of its family. In its general

air and movements, however, it differs from them in many respects ; it walks with a more stately step, flies faster and more gracefully, and constantly assumes a variety of strange postures ; when standing, it frequently buries its head, neck, and one leg in its plumage, and thus presents the appearance of a great white ball fastened to the top of a thin stick. The large nest of this bird is placed amongst reeds, of portions of which it is also built ; so firm and strong are these heaps that, as we are told, they can support the weight of a man. The eggs are usually three or four in number, and have a smoother shell and bluer tint than those of the species before described.

THE LESSER EGRET.

The LESSER EGRET (*Herodias garzetta*) resembles the above bird in its general appearance and habits, but it is not more than twenty-four inches long and forty-two broad ; the wing measures twelve and the tail four inches. In this species the eye is bright red, the beak black, and the foot black, with greenish yellow joints. This beautiful little Egret occupies the same latitudes as the larger species, and, according to Layard, has been procured both in winter and nuptial dress in the vicinity of Cape Town ; also at Colesberg, and at the Kneysna. The stomachs examined by that naturalist contained multitudes of small aquatic shells. A nearly-allied species (*Ardea egretta*) is common on the Kneysna, but is so shy as to be almost unapproachable ; it breeds on a small rock on the sea.

The Little Egret is now very rare in Great Britain, but was formerly much more common, and was regarded by our forefathers as a dainty article of food. In the celebrated feast on the enthronisation of Archbishop Nevill no less than 1,000 Egrets are mentioned in the bill of fare.

THE CATTLE HERON.

The CATTLE HERON (*Bubulcus ibis*) represents a group recognisable by their compact form, short neck, short powerful beak, short legs, and the hair-like development of some of their feathers. The plumage is pure white during the breeding season, adorned with long, flowing, rust-red feathers on the crown, upper breast, and back. The eyes are light yellow, the bridles and eyelids greenish yellow, the beak is orange, and the foot of the adult bird reddish yellow ; that of the young is of a brownish shade. The male is nineteen inches long and thirty-four broad ; the wing measures nine inches and a quarter, and the tail three inches and a quarter ; the female is not quite so large. This species is extremely common in Egypt, where, unlike other Herons, it frequents inhabited districts, preferring inundated fields, and only occasionally visiting the banks of lakes or streams. In Egypt it is constantly seen following the buffaloes and cattle, or inspecting their backs, in search of insects or grubs ; and in Eastern Soudan accompanying droves of elephants for the same purpose. We have been told, on reliable authority, that as many as twenty of these birds are sometimes seen upon a single elephant. With the natives they live on most excellent terms, and carry on their acceptable work quite regardless of their presence. Such of these birds as inhabit Egypt commence breeding when the Nile rises, while those dwelling in Eastern Soudan lay somewhat earlier in the year. The nests are built close together upon trees, and are constantly seen close to the huts of the natives. The eggs, from three to five in number, are oval in form, and have a greenish blue shell.

THE NIGHT HERON.

The NIGHT HERON (*Nycticorax europæus*) has a compact body, short, thick, broad beak, curved at its culmen, moderately high legs, broad wings, and thick plumage, which, unlike that of the members of the family already described, has but three of its feathers unusually prolonged ; these are slender, and placed on the back of the head. In the adult bird, the crown, nape, upper part of the back, and shoulders are greenish black, the rest of the mantle and sides of the throat dark grey ; the feathers on

the under side are pale straw-yellow, and the three long crest-feathers either quite white or white and black. The eye is of a rich purple, the beak black with yellow base, the bare patch on the head green, and the foot greenish yellow. In the young, the mantle is brown, spotted with brownish yellow and yellowish white; the throat yellow, and belly white, spotted with brown; the eyebrows are brown, and the head without crest. This species is from twenty-one to twenty-two inches long, and forty-four broad; the wing measures twelve inches and a half, and the tail four inches and a quarter.

The Night Heron is extremely common in Holland in the summer, and is also met with in Germany, Italy, the south of France, and Spain; occasionally, but very rarely, it has been shot in Great Britain. It visits Africa during the winter, and is found far in the interior of that continent. In northern latitudes it appears about the end of April, and leaves again in September or October. The Night Herons both sleep and breed upon trees, and therefore principally frequent well-wooded localities, whether these be in the vicinity of water or not; in moist, well-planted regions, however, they are especially numerous. Except during the breeding season they sleep, or at any rate remain quiet, throughout the entire day, and only descend at twilight from their perches in order to seek for food. Upon the ground they progress slowly, with short steps, but move in the air with comparative swiftness, alternating an easy gliding motion with rapid but noiseless strokes of the wings. In places where these birds abound, they are often seen flying together in very large flocks, at a considerable height, on their way to a suitable hunting-ground, over which they generally hover before alighting. Among the branches they climb with an agility that is not exceeded by any member of the family. Their voice is extremely harsh, and somewhat resembles the discordant croak of the Raven. The Night Herons breed from May to July, and usually form regular settlements not only of their own species, but with many allied birds. The large, carelessly-constructed nest is placed high on trees, and contains four or five oval green eggs of very various shades. The female broods, whilst her mate mounts guard quietly perched by her side, or quarrels with and teases other males in his neighbourhood.

The Great Night Heron of America, which is considered by Audubon and others as a distinct species, is seen as far as the northern and eastern extremities of the United States, but is unknown farther northwards. In the winter it goes as far as the tropics. These birds arrive in Pennsylvania in April, and immediately take possession of their old nurseries, usually in the depths of a cedar swamp, or of some inundated and inaccessible grove of oaks; there they pass the day till twilight comes, and then the parent birds sally forth to the sea-shores and marshes in search of food for themselves and young, proceeding in marshalled ranks, and uttering from time to time a guttural "kwah," in a hollow voice, that resembles the sound of a person vomiting. The eyries of the "Kwah" birds have been occupied from remote times by eighty or one hundred pairs, and when the trees are felled, they only remove to another part of the same swamp.

The BITTERNS (*Ardetta*) are recognisable by their comparatively small size, slender bill, low feathered tarsi, their short wings, in which the second quill is longer than the rest, and weak short tail. The plumage, which is by no means striking in its coloration, varies in hue according to the age and sex of the bird.

THE LITTLE BITTERN.

The LITTLE BITTERN (*Ardetta minuta*) is from fourteen to sixteen inches long, and from twenty-one to twenty-three broad; the wing measures five inches and three-quarters, and the tail two inches. This elegant bird is of a glossy blackish green on the crown, nape, back, and shoulders; the upper wing and under side are reddish yellow, spotted with black on the side of the breast; the quills and tail-feathers are black; the eye and bridles yellow. The pale yellow beak is brown at its culmen; and



DAY AND NIGHT HERONS.

the foot greenish yellow. In the female all the dark parts are brownish black, and the light portions of the plumage pale yellow; the young have the crown and nape reddish brown, striped with a deeper shade, the under side spotted brown and reddish yellow, and lower belly and tail-covers white. The Little Bittern is only a summer visitor to Great Britain. It frequents marshes, osier holt, and other places in the neighbourhood of water, feeding on such small animal food as is there easily obtained.

The COMMON BITTERN (*Botaurus stellaris*) is the representative of a group having a compact body, long thin neck, a narrow high beak, large-toed feet, broad wings, a tail composed of ten



THE COMMON BITTERN (*Botaurus stellaris*). ONE-FOURTH NATURAL SIZE.

feathers, and thick plumage, which is slightly prolonged on the neck. The sexes only differ in their size. In both the crown is black, the nape greyish black, mixed with yellow, and the rest of the plumage spotted and streaked with dark brown of various shades; the throat exhibits three stripes; the eye is bright yellow, and the bare portion around it greyish green; the upper mandible is brownish grey, and the lower one of greenish hue; the foot is light green, with yellow joints. This bird is twenty-eight inches long and forty-eight broad. The wing measures fifteen and the tail five inches. The nest is placed in marshes, among reeds. The eggs are five in number, of an olive colour. Its food consists principally of fish and reptiles of various kinds. During the breeding season it utters a loud bellowing noise, and for this cause it probably received the generic name of *Botaurus*. "This bellowing noise," says Latham, "is supposed to arise from a loose membrane, which can be filled with air and exploded at pleasure. The situation of it is at the divarication of the windpipe. It is capable of great

distension, and is probably the cause of this singular phenomenon, observed, we believe, in no other bird, at least in the same degree." At other times the bird makes a sharp harsh cry on rising, not unlike that of a Wild Goose.

THE SUN BITTERN, OR PEACOCK HERON.

The SUN BITTERN, or PEACOCK HERON (*Eurypyga helias*), represents a group of South American birds, having a small meagre body, long thin neck, a head resembling that of a Heron, and a long, straight, hard-pointed, and powerful beak, compressed at its sides, and slightly arched at its culmen. The high slender foot has the hinder toe moderately developed; and the large broad wing has its third quill longer than the rest; the remarkably long tail is composed of broad feathers. The rich, lax, and variegated plumage is black upon the head and nape; the eyebrows, a line that passes from the corner of the mouth to the nape, the chin, and throat are all white; the feathers on the back and shoulders, and the upper secondaries are black, striped with brownish red; the feathers on the rump and upper tail-coverts are black and white; those on the neck striped black and white; and those on the under side yellowish or brownish white; the quills are light grey, veined with black and white, and striped with brown; the tail is similarly coloured, but is broadly marked with a black stripe, edged on one side with brown. Slight variations from the above colours and markings are often observable. The eye is red, the beak yellow, and the foot straw-colour. This species is about sixteen inches long.

This beautiful bird is a native of the northern parts of South America, and is met with on the coast and river-banks from Guiana to Peru, and from Ecuador to the Province of Goyas, in Brazil. Upon the shores of the Orinoco and Amazon it is especially numerous. We are told by travellers that among all the gorgeously-coloured inhabitants of these luxuriant regions, the Peacock Heron is conspicuous, presenting as it does a most brilliant combination of yellow, green, black, brown, and grey, when seen by the full light of the sun, in whose rays it delights to bask, keeping meanwhile its wings and tail gracefully outspread. In Para, in Northern Brazil, says Bates, "the banks at the edge of the water are clothed with mangrove bushes, and beneath them the muddy banks, into which the long roots that hang down from the fruit before it leaves the branches strike their fibres, swarm with crabs. On the lower branches the beautiful *Ardea Eurypyga helias* is found. This is a small Heron, of exquisitely graceful shape and mien; its plumage is minutely variegated with bars and spots of many colours, like the wings of certain kinds of moths. It is difficult to see the bird in the woods, on account of its sombre colours and the shadiness of its dwelling-places; but its note, a soft, long-drawn whistle, often betrays its hiding-place. I was told by the Indians that it builds on trees, and that the nest, which is made of clay, is beautifully constructed. It is a favourite pet-bird of the Brazilians, who call it Pavaõ (pronounced 'Pavaong'), or Peacock. I often had opportunities of observing its habits. It soon becomes tame, and walks about the floors of houses, picking up scraps of food, or catching insects, which it secures by walking gently to the place where they settle, and spearing them with its long slender beak. It allows itself to be handled by children, and will answer to its name 'Pavaõ! Pavaõ!' walking up with a dainty, circumspect gait, and taking a fly or beetle from the hand." According to Castelnau, in its wild state the Sun Bittern is by no means so amiable, but if molested, springs upon its enemy as a cat does upon a mouse, beating the air meanwhile with its wings.

For further particulars respecting the habits of this beautiful species, we are indebted to observations made on birds that have been successfully reared in the Zoological Gardens of London and Amsterdam. A pair of Peacock Herons purchased in 1862 by the London Zoological Society, in 1865 showed symptoms of a desire to breed. According to Mr. Bartlett, whom we have to thank for the following interesting particulars, early in May they commenced carrying bits of grass, sticks,

and such-like scraps, and were constantly walking round their pond, evidently in search of materials to compose a nest, and appeared to try to mix wet dirt with bits of moss. This proceeding suggested the idea of supplying them with wet clay and mud, which they at once employed. After a short time, they decided to make their nest on the top of a pole or tree about ten feet from the ground, on which was fixed an old straw nest. Both birds carried up mud and clay, mixed with bits of straw and grass-roots, in order to form the outer wall, and plastered the inside thickly with a coating of mud. Shortly after the nest was completed a broken egg was found, and in the early part of June another was laid; both parents took their turn in the work of incubation, and hatched the young bird on the 9th of July. It was covered with fine short down, and closely resembled a young Plover or Snipe in its general appearance. It remained in the nest, and was fed with small live fishes and insects, and did not gape or cry, but as soon as the parents appeared with food, it pecked the morsels from them, and swallowed them. It left the nest in twenty-one days, its wings being strong enough to bear it to the ground, where it was fed as before, and never returned to the nest; it grew very rapidly, and in two months' time was not distinguishable from the adults. Early in August the old birds began to repair the nest, adding a fresh lining of mud and clay; and at the end of the month the female laid another egg. This time the male attended more to the duties of incubation than his partner, who devoted her principal attention to feeding her now full-grown offspring. The second young bird was hatched on the 28th of September, but received such slight attention from its parents that the keeper feared it might starve from their neglect, and he therefore determined to go up by a ladder and feed it. The hungry little fellow took the food readily from his hand, and was thus reared till it arrived at maturity.

The MARSH-WADERS (*Paludicolæ*) comprise so great a variety of species as to render a general description of their characteristics extremely difficult. In these birds the body is powerful, the neck of moderate size, the head small, the beak round and straight, the legs long, and the feet furnished with four toes; the wings are of medium length, and the tail short. The thick plumage varies strikingly in its hues in old and young birds, and but little in the sexes. Most of the members of this group occupy moist or boggy localities, and pass their lives upon the ground, while some few frequent the branches of trees. Insects, small animals of various kinds, combined with vegetable diet, afford them the means of subsistence. The eggs are deposited in a nest, and have a spotted shell.

The CRANES (*Grues*) constitute by far the largest, best formed, and most intelligent division of the above birds, and are characterised by their almost conical body, long thin neck, small, beautifully-shaped head, and sharp, moderately strong beak, which is straight and slightly compressed at its sides and blunt at the culmen, about as long as the head, soft at its base, and hard at the tip. The long powerful legs are bare, and the feet are furnished with four toes; of these the hinder toe is so small as not to touch the ground; the exterior and centre toes are connected by skin as far as the first joints; the claws are short, blunt, and flatly curved, the wings large and broad, with the third quill longer than the rest and the upper secondaries much prolonged; the short tail is usually rounded, and the thick plumage composed of small feathers; in some species the head and neck are bare, in others adorned with beautiful plumes. The sexes are similar in their coloration, but differ much in size; the young resemble the adult bird after the first moulting, but only attain the flowing crest at a later period.

Cranes are met with in almost every portion of the globe, but are especially numerous in its warmer regions; such as inhabit northern latitudes migrate as far as, but do not breed in the countries near the equator. Marshy localities or morasses, in the vicinity of cultivated land, are the situations

they prefer, as affording a rich and constant supply of the frogs, molluscs, worms, and vegetable diet upon which they subsist. In Palestine the Cranes visit the cultivated districts only in the time of their spring migrations, when but a few pairs remain in the marshy plains, while the greater number pass on to the north. In the Southern Wilderness they resort in immense numbers to certain favourite roosting-places during the winter. Towards evening at this season, we are told that clouds of these enormous birds literally darken the air. Their roosting-place, according to Dr. Tristram, is usually a gently-sloping, isolated knoll, where no ambush is possible, and where they can keep a good look-out on all sides. In such situations their whooping and trumpeting cry is to be heard through the



THE SUN BITTERN, OR PEACOCK HERON (*Eurypyga helias*). ONE-FOURTH NATURAL SIZE.

entire night. The following interesting particulars respecting the migrations of these birds in the Wilderness of Sinai are from the notes of the Rev. F. W. Holland:—"On March the 22nd we saw an immense flock of Cranes crossing the Red Sea from Africa. The line appeared to stretch across the whole breadth of the sea. Five days afterwards we found a solitary one amongst the mountains, which did not attempt to fly, but stalked majestically on before our camels, quite regardless of a few revolver bullets whizzing close past him. At last an Arab boy gave chase, and running him into a bush soon caught him, and returned in triumph, holding him up by the tips of his wings. When released he stalked on as unconcernedly as before; but when on the point of being caught again, the strange bird suddenly took wing, and after wheeling round several times flew away over the mountains. On the 13th of April, three days south of Beersheba, in the desert, another large flock of more than two

thousand Cranes passed over our heads, all going north as the others. In the beginning of May, several smaller flocks were seen crossing the same desert from Akabah towards Suez."

THE COMMON CRANE.

The COMMON CRANE (*Grus cinerea*) is recognisable by its partially bare head, and the long curly feathers on its upper wing-covers. In this bird the plumage is principally ash-grey, black in the region of the throat and brow, and whitish on the side of the neck; the quills are black, the eyes brownish red, and the feet blackish; the beak is reddish at its base, and blackish green at its tip. This species is four feet and a half long, and seven and three-quarters broad; the wing measures twenty-five and the tail eight inches in length.

The Common Crane is a native of the northern portions of the Eastern Hemisphere, from Central Siberia to Scandinavia, and from thence wanders south as far as China, India, and Central and Western Africa. The periodical migrations of these birds are remarkable for such punctuality that for a long series of years they have been observed to pass through France in the month of October, invariably returning during the latter half of the month of March. On these occasions they always fly in large flocks, which move with great rapidity; and alight during the day to rest and seek for food. The Common Crane, although now only an occasional visitor to England, was formerly much more common, and bred in the marshes, which then afforded it food and shelter. Since these have been drained, and the land cultivated, they have almost entirely disappeared. In Charles II.'s time Sir Thomas Browne writes: "Cranes are often seen here in hard weather, especially about the champaign and fieldy part. It seems they have been more plentiful, for in a bill when the Mayor entertained the Duke of Norfolk, I met with Cranes in a dish."

In an account preserved by Leland, in his "Collectanea Antiqua," of the great feast at the enthronisation of George Nevill, Archbishop of York and Chancellor of England, in the reign of King Edward IV., 204 Cranes form a part of the goodly provision detailed; and in the second course of the dinners, Crane forms the first "rost" dish, followed by "Cony, Heronshaw, and Curlew."

During their migrations, these birds always fly in two lines, which in front meet in an acute angle, thus forming a figure somewhat resembling the Greek letter γ , which, indeed, is said to have derived its shape from this very circumstance. One of the company always flies in advance of the rest, and thus constitutes the vertex of the angle; and if the movements of the flock are watched, it may readily be observed that when this individual becomes fatigued by being the first to cleave the air, it falls to the rear, and leaves the next in succession to take its post. It has been noticed, moreover, that when the Cranes in their migratory flights meet with a lofty mountain, they utter shrill cries, appear anxious and restless, and fly without any kind of order. Gradually, and each for itself, they now ascend spirally until such time as they have attained sufficient height to pass over the obstacle, when, assuming their original formation, they proceed on their course. At times their flight is so very high that, notwithstanding each individual occupies a considerable space, the birds themselves, though heard in the air, are not perceptible to the naked eye. Their shrill, loud, and trumpet-like note is audible far and near, and if at a short distance is almost deafening. Their voices are rendered more powerful by the peculiar construction of the wind-pipe, which forms several curvatures in the breast-bone, before descending into and joining the lungs. This tall and stately bird, when it stands upright, reaches to the breast of a man. It is of a shy and wary disposition, and when a large flock alights in a field, either for the purpose of feeding or resting, one or more of the party is always seen standing at some little distance, with head erect, and evidently on the watch. On the approach of danger this individual is the first to take wing, on which the rest follow its example. The nest of the Crane is generally placed among the thick reeds or in the luxuriant herbage of their

favourite marshes, but occasionally on the top of some deserted edifice. The eggs are two in number, and have a greenish shell, spotted with brown. Both parents brood, and feed their offspring at first in the nest; the young do not attain their full strength of wing until several months old.

THE DEMOISELLE, OR NUMIDIAN CRANE.

The DEMOISELLE, or NUMIDIAN CRANE (*Anthropoides virgo*), is distinguishable from its congeners by its short beak and entirely feathered head, which is decorated with two flowing plumes; also by the length of the plumage on the lower neck, and the prolonged but straight feathers on the upper wing-covers. The unusually soft plumage is chiefly light grey; the long feathers on the lower neck are deep black, the crests pure white, and the quills greyish black; the eye is bright red; the beak dull green at the base, horn-grey towards the extremity, and pale red at the tip; the foot is black. This species is from thirty-two to thirty-three inches long and sixty-four broad; the wing measures seventeen and the tail six inches. The young are without the flowing feathers on the head and neck.

This beautiful and attractive bird inhabits South-eastern Europe and Central Asia, and is especially numerous at the mouth of the Volga, in the countries bordering on the Caspian Sea, and in Mongolia and Tartary; from thence it wanders as far as Southern India and Central Africa; occasionally it has been also met with in South-western Europe. The Demoiselle Crane arrives and departs about the same time as the other members of the family, and like them frequents the vicinity of water or morasses, but, according to Radde, sometimes occupies mountain regions, even to an altitude of 3,500 feet above the sea. In its habits and modes of life it closely resembles the Cranes already described, and like them lays but two eggs. Both sexes brood, and commence their preparations about April; by the end of July the young are fledged, and shortly after that time are able to fly in company with the adults. The Demoiselles have received their name from the dancing movements in which they frequently indulge, the males entertaining the females and each other by leaping and turning round, accompanying all their actions with a constant waving of the head.

The AFRICAN CROWNED CRANES (*Balearica*) possess a powerful body, moderate-sized neck, large head, and a strong, conical, slightly-curved bill of medium length; the legs and feet are long; the claws strong; the wings very much rounded, with the fourth quill longer than the rest; the tail is short and straight; and the plumage thick. The back of the head is adorned with a conspicuous plume of bristle-like feathers, while those on the neck and upper breast are prolonged, and those on the wing-covers disunited at the web; the prominent cheeks and throat are bare. The sexes differ but little in colour; the young are of duller complexion than the adults. These fine birds are natives of Africa, and have hitherto been classed with the Cranes; owing, however, to the many important points in which they differ from the members of that family, we have preferred to place them in a different group.

THE CROWNED AFRICAN OR PEACOCK CRANE.

The CROWNED AFRICAN OR PEACOCK CRANE (*Balearica pavonina*) has black plumage, and a golden yellow and black crest; the feathers on the wing-covers are pure white, and most of the upper secondaries reddish brown, those at the exterior being golden yellow; the eye is white; the cheeks are light flesh-pink above, and bright red below; the beak is black, tipped with white; and the foot blackish grey. During the life of this bird the plumage is covered with a blueish dust. The length of the body is thirty-eight inches, the breadth seventy-two; the wing measures nineteen inches and a half, and the tail eight inches and a half.

This species was formerly supposed to be a native of the Balearic Isles, whence its scientific

name. Central Africa, from 17° north latitude, is, however, really its principal habitat ; whilst in the most southern portions of that continent it is replaced by a nearly-allied species. In these regions it occupies the flat bush-covered shores of rivers and streams, or light woods, and is to be seen during the day principally upon the small islands and sandbanks, whither it comes in pairs or small flocks, either to seek for food or to perform a variety of dancing movements. During the rainy season these small parties often increase to companies numbering more than one hundred birds, and occasionally they associate with the Grey or Demoiselle Cranes. Upon the ground the Crowned Crane usually walks erect and slowly, with its crest upraised ; but if sore pressed it can run with such swiftness as renders it a matter of difficulty for a man to overtake it. Before rising into the air it runs for a short distance with wings outspread, and then mounts with slowly-flapping pinions, extended neck, and crest laid back. It is at present uncertain whether both sexes indulge in the exercise above alluded to, during which the performers often spring three or four feet high, turn, twist, and step with their feet as if dancing. Their loud call is supposed to resemble the Arabic word "Rharmuk," and may be heard at the distance of at least a quarter of a mile. Seeds, grains, berries, portions of plants, insects, and occasionally mussels or small fish, are the principal food of these birds ; and for these they begin to seek about sunrise, and after feeding for about two hours bathe, dance, and preen themselves. This one repast is usually sufficient for the entire day ; at night they fly with loud trumpeting cries to seek repose upon the trees. We have seen as many as thirty or forty Peacock Cranes perching in the branches, and from this circumstance conclude that they also breed in similar situations. The capture of these birds is attended with much difficulty, owing to their extreme shyness ; when caught, however, they are readily tamed, and carry on their dancing movements even in captivity.

The FIELD STORKS (*Arvicola*) have a short or moderately long bill, with soft base and horny tip ; high feet, furnished with small toes, the hinder of which is too short to reach the ground ; and medium-sized or short wings. The tail is of various lengths, and the plumage rather thick ; the cheek-stripes and a patch around the eye are bare. These birds are natives of South America, where they frequent dry, cultivated districts, and subsist upon seeds and insects ; their nests are placed on or near the ground ; the eggs are of uniform hue.

The SNAKE CRANES (*Dicholophus*) constitute a group of remarkable birds, having a slender body, long neck, moderately large head, and short, hard, powerful wings, in which the fourth and fifth quills are longer than the rest, and shoulder-feathers prolonged. The long, decidedly-rounded tail is formed of ten feathers, the slender beak is shorter than the head, slightly compressed, straight or curved, and hooked at its tip. The long legs are unfeathered, and the short toes armed with thick, hooked, and pointed claws, resembling those of a bird of prey. The head-feathers are soft, long, and pointed ; and those on the brow graduated from the base of the beak, till they form an upright crest. The plumage on the belly and rump is of downy texture, and that about the base of the bill bristle-like ; the cheek-stripes are bare.

THE BRAZILIAN CARIAMA, OR CRESTED SCREAMER.

The BRAZILIAN CARIAMA, or CRESTED SCREAMER (*Dicholophus cristatus*), has grey plumage, each feather delicately marked with zigzag lines of various shades ; upon the breast, the feathers are only marked upon the shaft ; and those on the lower belly are without any lines. The long feathers on the head and neck are blackish brown, the quills brown, striped with white ; the two centre tail-feathers are greyish brown, the rest blackish brown in the middle, and white at the base and tip. The eyes



CROWNED, DEMOISELLE, AND COMMON CRANES.

are light sulphur-yellow, the cheek-stripes greyish flesh-pink, the bare eye-rings blueish, and the feet reddish brown in front, and bright red at their sides; the beak is coral-red. The female has shorter feathers on her head and a yellowish shade in her plumage. The young resemble the mother. This bird is from thirty-one to thirty-two inches long; the wing measures fourteen and the tail twelve inches.

The Cariamias inhabit the extensive open meadows of Central Brazil, and are also met with throughout a great portion of South America. In the states of La Plata they are replaced by a very similar species. These birds live in pairs or small families, and if disturbed, at once take refuge in



THE CARIAMA, OR CRESTED SCREAMER (*Dicholophus cristatus*). ONE-SIXTH NATURAL SIZE.

the long grass that covers their favourite haunts, peeping forth from time to time, in order to reconnoitre, and forthwith returning to their place of safety. So cautious are they, indeed, that Burmeister tells us he has often heard their voices close to him during an entire day, without ever succeeding in catching a glimpse of them. In the daytime the Cariamias are occupied in searching for the insects, snakes, and other reptiles upon which they subsist. Owing to the great services they render by destroying the latter noxious creatures, the natives are forbidden by law to kill them. Burmeister tells us that they also eat berries. Unlike the Cranes, these birds are constantly in motion throughout the day. According to the Prince von Wied, they occasionally repose upon the branches, but if alarmed, at once return to the ground, and endeavour to save themselves by running, a mode of locomotion which they perform with such extraordinary rapidity as to outstrip a horseman. The harsh loud

voice of this species has been compared to the barking or yelping of a young dog, or the hoarse cry of a bird of prey. These most displeasing sounds are sometimes continued for half an hour at a time, the noisy performer sitting upright on a branch, and turning its head about in a sort of accompaniment to its harsh screams, which Burmeister remarks are enough to drive any person with weak nerves from its vicinity. During the period of incubation, the males contend fiercely, tearing each other with their beaks, and presenting a most ludicrous appearance, as, with plumage inflated and tail fully spread, they bound into the air. The nest is usually placed in trees, at no great height from the ground, and is formed of dry twigs, lined with a coating of clay or dung. The two eggs, which are about as large as those of the Peacock, have a white shell, sparsely dotted with rust-red. The young, when first hatched, are clad in thick reddish down, marked with deep greyish brown, and remain for some time in the nest. The Crested Screamers are readily tamed and reared in the poultry-yard. Burmeister saw two of these birds that were domesticated in a farmhouse, standing warming themselves at the fire among a group of men and children. If driven forcibly to one side, they merely retired quietly to a short distance, and almost immediately returned to their former position. Although the flesh of the *Cariama* is white and well-flavoured, it is seldom killed, as its swiftness of foot renders its capture a work of much difficulty, even to a mounted sportsman. The plan usually adopted, according to the Prince von Wied, is to follow it patiently on horseback, until at last it is driven into a corner and becomes too weary to make further attempts to escape or elude pursuit.

The TRUMPETERS (*Psophia*) possess a powerful body, moderately long neck, medium-sized head, and short, curved beak, compressed at its sides and hooked at its tip. The feet are high, the tarsi long, the toes short, and armed with curved sharp claws; the exterior and centre toes are united by a short skin; the arched wing has its fourth quill longer than the rest; the tail is short and weak, and the plumage principally composed of large feathers. Those on the head and neck are of velvety, and those on the under side of downy texture.

These birds frequent the South American forests, where they render themselves conspicuous by their most peculiar and noisy cry. This loud trumpet-like sound is uttered six or seven times in succession, without opening the beak, and is so deep and sonorous that it appears to proceed from the bird's entire body. According to Pallas, the strange noise results from a peculiar construction of the windpipe, which at its upper portion is as thick as a Swan's quill, but becomes more slender as it enters the chest, when it gives off two membranous semicircular air-bags, of which the right is the largest, and divided into three or four cells. The hollow internal drumming, preceded by a wild cry, is evidently produced by the vibration of the air forced into these air-bags by the action of the muscles of the thorax. During the performance the chest heaves as in birds when singing.

THE AGAMI, OR GOLD-BREASTED TRUMPETER.

The AGAMI, or GOLD-BREASTED TRUMPETER (*Psophia crepitans*), is black upon the head, neck, upper back, wings, lower breast, belly, and rump; the shoulder-feathers are purplish black, shaded with blue or green; the upper breast is steel-blue, with a copper-red sheen. The eye is reddish brown, the bare ring around it flesh-pink, the beak greenish white, and the foot yellowish pink. This species is twenty inches long; the wing measures eleven inches, and the tail one inch.

The Agami occupies such parts of South America as are situated north of the Amazon, while on the other side of that mighty stream it is replaced by another but nearly-allied species. Both occupy forests, and are met with in large flocks, that often number some two hundred birds. These parties wander about together in search of the fruit, berries, seeds, and insects upon which they subsist; and usually move with a slow and stately step, enlivening themselves from time to time by leaping into the

air with a variety of ludicrous movements, and if disturbed, they at once seek safety by running. Their flight is so weak, according to Schomburghk, that when crossing a river they are often compelled to drop upon the water and save themselves by swimming. This statement explains the reason why the habitat of the two species is so strictly confined to the two sides of the Amazon. If much pressed, after running some distance, they flutter into the branches or lie close to the ground, and are then readily shot. When alarmed, their remarkable cry is heard to most advantage. The Agamis usually deposit their eggs in a slight hollow on the ground, generally at the foot of a tree. The eggs have a light green shell, and are ten in number. The young leave the nest as soon as they are hatched, but do not lose their downy covering till they are several weeks old. These interesting birds become remarkably docile when domesticated, as the following account, drawn from the "Galerie des Oiseaux," will show :—"The Agami soon learns to obey the voice of its master, follows him wherever he goes, and appears delighted at receiving his caresses ; it welcomes his return with alacrity, and seems to repine at his absence. In the same proportion that it appreciates the favours bestowed upon it, it is jealous of any rival. Should even a dog approach, it immediately assails it with its beak and drives it to a distance, with every symptom of displeasure. It presents itself regularly at the dinner-table, from which it chases all domestic animals, and sometimes even the negroes who wait at table, should they happen to be strangers, and only asks for a share of the dinner after it has expelled from the room all who might aspire to favourable notice from the family. It is remarkably courageous ; dogs of moderate size are obliged to cede to its authority. It walks out alone, without any danger of losing itself, and it is even asserted that an Agami may be trusted with the care of a flock of sheep, and that every morning it will drive ducks and fowls to their feeding-place and bring them home at night, after carefully collecting any stragglers. As for the bird itself, it is never shut up, but sleeps just where it pleases, upon the roof of a barn, or in the farmyard." Its trumpeting is described as resembling the sound produced by a person endeavouring to pronounce "Tou, tou, tou ; tou, tou, tou," with his mouth shut, or the doleful noise made by the Dutch bakers, who blow a glass trumpet to inform their customers when their bread is taken out of the oven.

The SCREAMERS (*Palamedææ*) constitute a group of strange birds, possessing large heavy bodies, long necks, small heads, long powerful wings, strong tail, and moderately high, thick foot, with remarkably long toes. The bill is shorter than the head, compressed at the culmen, hooked at its tip, and covered with a cere at its base. The legs are partially bare, and the exterior and middle toes connected by a skin ; the hind toe is so long as to touch the ground ; the claws are of moderate size, slightly hooked, and pointed. In the wing the third quill is longer than the rest, and the rounded tail is composed of twelve feathers ; the plumage of the body is thick ; the neck is covered with small feathers. The members of this group have two powerful spurs on the joint of the wing, and one species has a horny protuberance on the head. The sexes are unlike in colour.

The Screamers frequent the marshy grounds of South America, where they live in pairs or small parties. In disposition they are extremely timid and shy, but soon betray their presence by their noisy vociferations. Seeds and portions of plants constitute their principal fare, but they do not reject insects, small reptiles, or even fishes. Upon the ground they move with much dignity, and in their manner of flight nearly resemble some of the larger birds of prey ; when at rest, they generally perch on the branches of lofty trees. Although usually peaceful, they exhibit much courage if attacked, and defend themselves boldly with the formidable spurs upon their wings. The nest is large, situated on the ground in their favourite marshes, and contains two unspotted eggs. The horn and spurs of this bird are much esteemed by the Indians as healing remedies, and in many parts of the interior are articles of trade.

THE ANIUMA, OR HORNED SCREAMER.

The ANIUMA, or HORNED SCREAMER (*Palamedea cornuta*), is characterised by a horn upon the brow, its thickly-plumaged bridles, and the short feathers on its head and neck. The horn of this species, which is about five or six inches long, either straight and upright or slightly curved, is situated near the beak, and is about a line and a half in diameter at its base. The upper wing-spur is about two inches long, pointed and triangular, and curves gently upwards; and the lower one strong, almost

THE GOLD-BREASTED TRUMPETER (*Psophia crepitans*).

straight, and about four lines long. The velvety feathers on the crown are whitish grey tipped with black; those of the cheeks, throat, neck, back, breast, wings, and tail are blackish brown; those on the shoulder and large wing-covers of a greenish metallic shade; and the small cover-feathers yellowish at their roots. The feathers on the lower throat and upper breast are silver-grey, broadly edged with black, and those of the belly and rump pure white, the horn whitish grey, and the foot slate-colour. This bird is thirty inches long and seventy-eight broad; the wing measures twenty-one, and the tail eleven inches.

The Aniuma is a native of Brazil, where it frequents the vast swamps and savannahs, and preys upon the swarms of small animals with which they teem. In these localities, an incessant discord of jarring sounds arises from the voices of the multifarious inhabitants, but high and shrill above them all

is heard the loud startling cry of the Horned Screamer. Formidable snakes of all kinds infest these haunts ; but by the aid of the powerful, large, hard spurs upon the joint of each wing, it is enabled to protect itself and its young from their assaults. If not attacked, however, its habits are shy, and its disposition gentle. When in search of the leaves and seeds of the aquatic plants on which it partly subsists, it wades deep into the water, and when on the ground walks with an air of pride, keeping its head elevated. Its flight, as might be expected from the length and spread of its wings, is strong and



THE ANIUMA, OR HORNED SCREAMER (*Palmadeca cornuta*). ONE-FIFTH NATURAL SIZE.

sweeping. These birds live in pairs that are united for life, and make their nest on the ground. According to the natives they lay two white eggs.

THE CHAUNA, OR TSCHAJA.

The CHAUNA, or TSCHAJA (*Chauna Chavaria*), has a horn upon the brow, but a shorter beak than the Aniuma ; the bridles are bare, the nape decorated with a crest, and the plumage soft, but not of velvety texture, on the head and neck. The feathers of the crest and on the crown are grey, those on the cheeks, throat, and upper neck white, those of the mantle brown, of the nape and

upper breast deep greyish blue. The edges of the wings, the lower wing-covers, and feathers on the rump and belly are whitish. The eyes are yellow, and the bridles and bare eye-rings flesh-red ; the beak is black, and the foot light red. This species is thirty-two inches, the wing measures nineteen, and the tail eight inches.

The Chaunas are peculiar to the northern parts of South and Central America, where they frequent marshes, or occasionally river-banks, either in pairs or small parties. Their manners are shy, and when not disturbed their gait is stately and slow. In the air their movements are easy and swift, but they are unable to run without the assistance of their wings ; when about to rest, they resort to the branches of high trees. According to Gray, these birds are kept by the natives with their poultry, going with them to feed about the neighbourhood during the day, and proving very useful in defending the fowls, by the aid of their spurs, from the attacks of the numerous feathered tyrants with which the country is infested. Marshy or inundated localities are the situations they principally frequent, as their food consists entirely of the leaves of aquatic plants, grapes, and seeds. The spacious nest is made of small branches, and is usually placed in a bush surrounded by water, or among reeds and rushes. The eggs are two in number, and have a rough white shell. According to Gray, if the living bird be handled, a peculiar crackling is felt, which is caused by the quantity of air lodged between the skin and the muscles.

The RAILS (*Ralli*) are characterised by their high body, which is much compressed at its sides, their moderately long neck and small head. The bill is variously formed, compressed at the sides, and seldom longer than the head. In the high, long-toed foot, the hind toe is well developed, the wing is rounded, and does not extend so far as the extremity of the rounded tail, which is formed of twelve feathers. The plumage is compact and thick. The members of this family inhabit almost every portion of the globe, and exhibit many modifications of form, according to the situation they are created to occupy. Owing to the slender shape of their bodies, they are able to thread their way through beds of the thickest stems of reeds, bulrushes, and other aquatic plants, among which they seek shelter ; or, like the Land Rail, penetrate the tall grass of the meadow, and that so rapidly and noiselessly that they elude pursuit with the greatest ease, and seldom can be forced to take wing. All the various species are able to pass over the surface of soft ooze, or the flat leaves of plants that float thickly on the water of their favourite haunts ; many of them can also swim with much facility. The Rails are social in their habits, and frequently assemble in small flocks, which remain together until the migratory season. Insects, larvæ, worms, eggs, and even young nestlings, frequently fall a prey to them ; but seeds of various kinds and portions of plants form their principal fare. The nest, which is very carefully constructed, is usually placed among reeds, grass, or rushes ; the light-coloured eggs are darkly spotted, and from three to twelve in number. Both parents brood, and they rear two families during the summer. The flesh of these birds is excellent, but it is difficult to shoot them without the aid of a dog.

The SNIPE RAILS (*Rhynchæa*) are recognisable by the peculiar form of their bill, which is longer than the head, straight at the base, compressed at its sides, and inclines and curves downwards at the tip of both mandibles, which are of equal length. The moderate-sized foot is furnished with short unconnected toes, and has the hind toe placed higher than the rest ; the broad wing is slightly rounded, the third quill being longer than the rest ; and the tail is composed of twelve feathers. The plumage is very beautifully variegated, the dress of the male being usually of quieter tints than his mate ; and for this reason superficial observers have often been mistaken as to the sex of the latter.

THE GOLDEN RAIL, OR PAINTED CAPE SNIPE.

The GOLDEN RAIL, or PAINTED CAPE SNIPE (*Rhynchæa Capensis*), is of a blackish grey on the upper part of the body; the eyebrows, a stripe on the head, and another on the shoulder, are yellowish; the upper wing is brown, marked with black; the lower throat and upper breast are deep blackish grey and white; the rest of the under side is white; the quills and tail-feathers are adorned with golden eyes and black spots. In the female the upper parts of the body are dark brown, irregularly striped with greenish black. The brown head has a green gloss, the eyebrows are yellowish white, a line over the head is yellowish, the neck reddish brown, and the upper breast blackish brown; the under side and a line on the shoulder are white, the quills and tail-feathers green and black, enlivened by golden eyes, and the feathers of the wing-covers green, striped with black; the eye is brown, the beak dark green at the base, and tipped with brownish red; the foot is light green. The male is nine inches long and sixteen and a quarter broad; the wing measures five inches and one-sixth, and the tail two inches; while the female is ten inches long and eighteen broad.

The Painted Snipes are dispersed over a large portion of Africa. They keep together in small parties, and lead a quiet and retired life, beneath the sheltering leaves of aquatic plants that overspread the morasses and river-banks, which are their favourite haunts. We are almost entirely without particulars respecting these birds, except that they run well and swiftly, and flutter rather than fly, when compelled to rise into the air. Near the Cape they are known by the name of "Keuvitts," as that word is supposed to resemble their cry, which is constantly heard during evening. We obtained two eggs from the ovary of one of these Snipes, shot in the month of May; in form and colour these resembled the eggs of the Gallinago.

THE WATER RAIL.

The WATER RAIL (*Ramus aquaticus*) represents a group having the bill rather longer than the head, straight or slightly curved, and compressed at its sides; the feet are moderately large, the wings short, blunt, arched, and formed of soft quills, of which the third and fourth are the longest; and a very short, narrow tail, composed of twelve weak, curved, and pointed feathers. The thick compact plumage is of a golden yellow, spotted with black on the back; the lower part of the body and sides of the head are blueish grey, striped with black and white on the thighs. The belly and rump are brownish yellow, the quills pale brownish black, edged with greenish brown, and tail-feathers black bordered with olive-brown. The eye is dull red, the beak brownish grey at the culmen, and bright red at its margins and lower mandible, the foot is brownish green. The female is smaller than her mate, but resembles him in colour. The young are reddish grey on the under side, spotted with various shades of black. This species is eleven inches long and fifteen broad; the wing measures four inches and a half, and the tail two inches and one-sixth.

The Water Rail is a native of Northern and Central Europe, and Central Asia, as far east as the river Amoor; and is also met with in Southern Europe and Northern Africa during the course of its wanderings. In England it is permanently resident, and is to be found if sought for at all seasons of the year, but owing to its shy and sedentary habits, and the peculiar situations it frequents, is not very frequently seen. Marshes, pools, or water-courses are the favourite haunts of this bird; such as are covered and edged with reeds, dense grass, or aquatic plants being preferred, as in these it finds a constant shelter and refuge, the narrow form of its head and body enabling it to pass through the closest masses with great facility. To this fact it is indebted for its principal means of security, as when driven into the air it flies awkwardly and slowly, with the legs hanging down. Few dogs even succeed in forcing it into view before it has gained its retreat, which is often a rat-hole, or a tangled

mass of tree-roots. When disturbed, it occasionally runs along the surface of the water, supported by the floating leaves, for which purpose its broad, spreading feet are well adapted; it can also dive with much facility. Worms, slugs, aquatic insects, together with the leaves and seeds of aquatic plants, are its principal food, and for these it chiefly seeks during the twilight hours. The nest of the Water Rail is composed of sedges and coarse grass loosely heaped together, and is made on the ground, amongst reeds and rushes, beneath bushes, and occasionally in short herbage. The eggs, from six to ten in number, vary somewhat in colour, but are usually brownish white, or greenish, spotted with violet, grey, and brown. The young look like little, round, puffy balls of down when first



THE GOLDEN RAIL, OR PAINTED CAPE SNIPE (*Rhynchaea Capensis*). ONE-THIRD NATURAL SIZE.

hatched, and at once roll into the water, where they swim about with as much delight and enjoyment as if they had been accustomed to the exercise for years. When domesticated, the *Rallus aquaticus* often exhibits the utmost affection and docility. In an instance that came under our notice, one of these birds not only ran freely about the house, following and obeying its master, but slept at night in his bed, beneath the coverlet.

The ARAMIDES (*Aramides*) are slenderly-formed birds, with strong bills, which are longer than the head, compressed at the sides, and slightly arched at the culmen; the legs are long, the tarsi thin, the moderate-sized toes quite unconnected, and the claws long, sharp, and curved. The medium-sized wing has the third and fourth quills longer than the rest; the tail is moderate, and the plumage of uniform hue. The members of this group occupy the marshy grounds of Central Brazil, where they seem to be general favourites among the country people, sometimes evincing a remarkable susceptibility of domestication.

THE SERRAKURA.

The SERRAKURA (*Aramides gigas*) is about eighteen inches long ; the wing measures ten and the tail three inches. Upon the head, upper neck, and legs, the plumage is slate-grey, and reddish brown on the nape ; the back and wing-covers are olive-green, and the lower belly and rump black ; the quills, lower breast, and sides of belly are bright rust-red ; and the tail-feathers of blackish hue. The eye is bright red, the bill yellowish green tipped with grey, and the foot flesh-pink.

These birds frequent the marsh-lands or moist grounds in the interior of Brazil, in search of the seeds and insects upon which they subsist. Throughout the morning and evening hours, their peculiar resonant cry is constantly heard, but owing to their shyness and the dexterity with which they conceal themselves, they are but rarely seen. The nest is placed amongst reeds or long grass. The eggs have a pale reddish yellow shell, slightly spotted with brown. When taken young, these birds are readily domesticated. Azara tells us that he saw a tame Serrakura running about a poultry-yard in Paraguay, and not only boldly defending itself from, but attacking the fowls, with whose most vulnerable parts it was evidently well acquainted. This bird showed a great fondness for eggs, and no sooner was one laid, than it was seized upon, carried off, and devoured ; nor did its audacity end here, for if the unlucky hens were longer in laying the next than suited its impatient temper, it fell upon them and pecked them so viciously that they were obliged to quit the nest. These depredations were not confined to its master's premises ; every yard in the neighbourhood was regularly visited and plundered, until at last complaints became so numerous and urgent, that this troublesome but most interesting little thief had to be killed.

THE LAND RAIL, OR CORN CRAKE.

The LAND RAIL, or CORN CRAKE (*Crex pratensis*), is recognisable by its high body, with much compressed sides, its moderately-long neck, and large head ; and its short, strong, compressed beak, with high culmen ; the leg is of medium length, and partially feathered ; the wing is wedge-shaped, its second quill being longer than the rest ; and the short weak tail is almost entirely concealed under the covers. The smooth but not very thick plumage is of a blackish brown above, spotted with yellowish grey ; the throat and fore parts of the neck are ash-grey, with brownish grey sides, spotted with brownish red ; the wings are brownish red, spotted with yellowish white. The eye is light brown, the beak brownish grey, and the foot lead-grey. The female is not so brightly coloured. This species is eleven inches long and eighteen broad ; the wing measures five inches and a half, and the tail two inches.

The Land Rail is found throughout a great part of Central Asia and the whole of Northern Europe, and visits not only the southern portions of the latter continent during the course of its peregrinations, but penetrates as far as Central Africa. In the British Isles it is a summer resident, and appears in the southern counties about April, generally departing about October. Marshy meadows, fields of green corn, and beds of reeds and rushes are its favourite resorts, and in these its peculiar creaking note is constantly to be heard. This call, according to Yarrell, may be exactly imitated by passing the edge of the thumb-nail, or a piece of wood, briskly along the line of the points of the teeth of a small comb, and so similar is the sound, that the bird may be decoyed by it within a very short distance. The male is the caller, and he continues to utter his discordant cry until a mate be found and incubation commenced, after which he is less frequently heard. In its general habits this species resembles the members of its family already described, and exhibits not only a similar dexterity in avoiding pursuit or observation, but, when alarmed, is cunning enough, we are told, to simulate death. Mr. Jesse relates the following interesting anecdote in corroboration of this

fact:—"A gentleman had a Corn Crake brought to him by his dog, to all appearance lifeless. As it lay on the ground he turned it over with his foot, and felt convinced that it was dead. Standing by, however, in silence, he suddenly saw it open an eye; he then took it up, its head fell, its legs hung loose, and it again appeared quite dead. He then put it in his pocket, but before long he felt it all alive, and struggling to escape. He then took it out, it was as lifeless as before. Having laid it again on the ground and retired to some distance, the bird in about five minutes warily raised its head, looked around, and decamped at full speed." The pairing season commences almost as soon as the Corn Crakes arrive, and during this period the males guard their mates with jealous care from the approach of a rival, and drive off any intruder with loud harsh cries. The nest is built when the herbage has attained a sufficient height, and is formed of fibres, moss, dry blades of grass, and similar materials. The eggs, which are usually seven or nine, but occasionally as many as twelve in number, are large and beautifully formed, with a smooth, glossy, yellowish, or greenish white shell, strewn with spots of various shades. The female broods for three weeks, and sits with so much devotion that she will remain to be taken in the hand rather than desert her offspring. The young are covered with black down, and at first seek shelter beneath their parents' wing; if alarmed they run like mice over the ground, and are almost instantly in a place of safety. The flesh of this species is good for the table.

The JACANAS (*Parrae*) form a group of remarkable birds, occupying the warmer parts of both hemispheres, and characterised by their slender body, long thin beak, narrow pointed wings, short tail, composed of slender feathers (in one species the latter are much prolonged towards the centre), and the extraordinary length of their thin toes and claws. The heavy, beautifully-coloured plumage is alike in both sexes, but the young differ considerably in appearance from the parents. Most members of this group have a bare patch or excrescence on the brow, and a thorn-like appendage on the first wing-joint. These beautiful birds frequent marshy ground, on the borders of rivers and ponds, and obtain the seeds and aquatic insects—that form their principal means of subsistence—from amongst the aquatic plants, over the surface of which their long feet enable them to run with astonishing rapidity. The nest is made among reeds, and contains usually either three or four eggs.

The cry of the Jacanas somewhat resembles a laugh, and is generally uttered just after they have alighted, or when they are about to take wing. If suddenly surprised they instantly give warning to their companions, and immediately fly away, the whole party following, with neck outstretched, and screaming loudly.

THE CHILIAN JACANA.

The CHILIAN JACANA (*Parra Jacana*) represents a division of the above group, having the slender wing armed with a spur, and composed of pointed feathers. The third quill is longer than the rest. The delicate bill is bare at its corners, and has a skinny appendage at its base; the feet are long and thin, and have the claws and toes of nearly equal length. The short tail, formed of ten soft, slightly-pointed feathers, is rounded at its extremity. In the adult of this species the head, neck, breast, and belly are black, and the back, wings, and sides of the belly reddish brown. The quills are yellowish green, tipped with black, and the tail dark reddish brown; the eye is pale yellow, the beak red, tipped with yellow; the bare patches on the brow and corners of the bill are blood-red, the feet grey, and the wing-spurs yellow. The young are yellowish white on the under side; the crown of the head and nape are black, and the back olive-brown. This species is from nine to ten inches long, the wing measures five inches and one-sixth, and the tail two inches. "A bird so well armed as the Chilean Jacana," says Molina, "cannot want for means of defence in case of necessity, and it of course fights with great courage and vigour everything that attempts to molest it. It is never seen in elevated places, and never perches upon trees, but lives wholly in the plains, and feeds upon insects and



WATER LILY — CUCKOO — CUCKOO — CUCKOO

WATER LILY — CUCKOO — CUCKOO — CUCKOO

worms. It builds its nest in the grass, where it lays four coloured eggs, spotted with black, a little larger than those of a Partridge. It keeps in pairs, and the male and female are almost always together, but it is rarely seen in flocks. When these birds perceive anyone searching for their eggs, they at first conceal themselves in the grass, without discovering any apprehension; but as soon as they see the person approaching the spot where the nest is placed, they rush out with fury to defend it. It is observed that this bird never makes the least noise during the day, and that it cries at night only when it hears some one passing. For this reason the Araucanians when at war are accustomed to watch the cry of this bird, which serves them as a sentinel to inform them of the approach of an enemy. They were formerly accustomed in Chili to hunt these birds with the Falcon, but this mode has been long out of use." The Jacana is good game, in no respect inferior to the Woodcock.

THE CHINESE JACANA.

The CHINESE JACANA, or WATER PHEASANT (*Hydrophasianus Sinensis*), differs from other Jacanas, inasmuch as it is without the naked forehead and appendages at the corner of the mouth, for which they are so remarkable; the tail, moreover, has the four central feathers of extraordinary length; the first and second primary quills of the wings are longer than the rest; the beak is very slender, the foot somewhat powerful, and the toes proportionately shorter than those of the spur-winged birds. In the Chinese Water Pheasant the fore part of the head, face, chin, neck, and upper breast are white; the hinder neck is yellowish white, marked with a black stripe, that separates it from the upper neck. The upper parts of the body are dark brown, gleaming in certain lights with purple. The upper wing-covers are white. A patch on the head is black; the breast deep brownish black; the lower wing-covers nut-brown; the first wing-quill black, and the second of a very dark shade; the third quill is black on the outer web and at the tip; its other parts are white; the secondary quills are singularly marked; the tail is black, the eye dark brown, the beak blue at its base and greenish towards its point. The length of the male is eighteen inches, and the breadth twenty-four inches. The wing measures eight and the tail ten inches. The female is larger than her mate. One measured by Jerdon was twenty inches long and thirty broad. During the winter the plumage of these birds is of a pale greyish brown on the upper part of the body, and the small wing-covers are transversely banded; the crown and nape are brown, the regions of the eyebrows white, and forehead spotted with white.

This beautiful bird is not confined to China, but is to be found throughout India and Ceylon wherever suitable localities invite its presence. In disposition it is by no means shy, and indeed appears to court admiration, for if driven from the floating lotus-leaves on which it walks, it gives itself but little trouble to escape from observation. At certain seasons it is said to utter sounds resembling the mewing of a cat or the whining of a puppy. Its food consists of aquatic insects, small mollusca, and vegetable substances. Its nest is constructed of aquatic plants, and floats upon the surface of the water. In July or August the female lays from four to seven beautiful eggs, of a bronze-brown or greenish shade. In winter these birds associate in small parties, but are not easily procurable, as if one is wounded it immediately dives, and when it again comes to the surface allows nothing but its bill to appear above water. The flesh of this species is excellent. Jerdon tells us that in Purneah the natives say that before the incubation, *i.e.*, the breeding, this Jacana says "dub, dub" (go under water), and afterwards in the cold weather "powai, powai," which in Purneah dialect means "next year." Amongst the Cingalese, according to Latham, it is known as the Cat Teal, from the peculiarity of its cry.

The WATER HENS (*Gallinulæ*) constitute a numerous and varied family, closely related to

the last-mentioned species, and largely distributed throughout the warm and temperate parts of the earth. These birds are characterised by their powerful, compactly-built body, moderately long neck, large head, and short, strong, deep, thick beak, the culmen of which is strongly arched; and in most instances are further distinguished by a naked projection from the beak, which spreads over the forehead. Their legs are strong and of moderate length, and their toes either very long, or provided with broad lateral fringes or lobes. Their wings are short, the third or fourth quill being usually



THE JACANA (*Parra Jacana*). ONE-HALF NATURAL SIZE.

the longest; the tail is very short, and they are more or less without variety of tint. In their anatomical structure they are very closely related to the *Rallidæ*.

All the *Gallinule* are inhabitants of marshy districts, and some of them might even be called water-fowl. They usually prefer sedgy lakes, large swampy morasses and brooks, or ponds and rivers well stocked with vegetation, but are without exception restricted to fresh water. They are generally seen swimming about in open spaces. They run with less agility than the Rails, but far surpass them in their powers of swimming and diving. Although these birds are by no means social in disposition, they show a remarkable attachment to any locality of which they have taken possession, keeping others, even of their own species, at a distance, and sometimes exhibit resolute courage in driving away intruders much larger and stronger than themselves. They also attack small birds

with murderous rancour, and are very destructive to young fledglings. On the other hand, they are tenderly attached to their own progeny, both parents exerting themselves for their defence and support, and evincing the greatest affection for each other. The nest is always built either among or in the immediate vicinity of the water-plants that abound in their favourite resorts. The female lays from four to twelve smooth-shelled and spotted eggs; the nestlings when first hatched are clad in dark-coloured down. As soon as the young are capable of exertion, they and the parent quit the place of their birth and wing their way, in some instances farther south, or merely to a more favourable situation, where they remain till after the moulting season.

The GALLINULES (*Porphyrio*), the most beautiful of the European *Gallinulæ*, and known in some countries as the Sultan's Chickens, were regarded by the ancient Greeks and Romans almost as objects of religious worship, and were kept in the neighbourhood of their temples, as though under the special protection of the gods. Even at the present day they are less persecuted than many of their congeners, probably on account of the beauty of their plumage. The members of this group are moderate-sized but powerfully built birds, distinguished by their strong, hard, thick, and very deep beak, which is of about the same length as the head, and at its base expands into a broad callosity, that spreads over the region of the forehead. The tarsi are long, and the feet strong, with large, widely-separated toes. Their wings are of moderate length, the plumage smooth, and remarkable for its rich colouring. These birds are generally to be met with in swampy localities, in the vicinity of fields of corn, or in rice-fields, which as they are almost constantly under water, seem to suit them as well as their favourite marshes. As regards their food, the Sultan's Chickens differ in no respect from the rest of the family. During the breeding season, they are constantly prowling about the ponds in search of the nests of other birds, which they plunder in the most daring manner. Their thefts are by no means restricted to attacks on smaller species; they rifle the larger ones with utter recklessness, so that in any marsh frequented by the Gallinules the broken eggshells testify to their destructive habits; they likewise often lay in wait for Sparrows after the manner of a cat before a mouse-hole; a single blow with their powerful beak at once destroys their victim, which is speedily torn to pieces and eaten. Tristram mentions having seen an imprisoned bird thus devour young Ducks.

THE HYACINTHINE PORPHYRIO.

The HYACINTHINE PORPHYRIO (*Porphyrio hyacinthinus*) has the face and fore part of the neck of a beautiful bright blue; the hinder part of the head, neck, and belly and thighs are dark indigo-blue, as are the breast, back, wing-covers, and quills, but these last are more vivid in their tints; the region of the vent is white; the eye is pale red, surrounded by a narrow circle of yellow; the beak and its prolongation over the forehead are brilliant red, and the feet yellowish red. The length of this bird is about eighteen inches and breadth thirty-two inches. In young birds the plumage of the back is greyish blue, and the under parts speckled with white. The Hyacinthine Porphyrio occupies the marshy districts of Spain and Italy, and is probably also to be found in North-western Africa. In North-eastern Africa it is represented by a nearly-allied species, called by the Arabs the "Dickme," to which we have given the name of *Porphyrio chloronotus*.

This species is to be seen in numbers, which vary with the season of the year, in Sardinia, Sicily, the lake district of the eastern coast of Spain, in the neighbourhood of Albufera de Valencia, upon the coast of Valencia, and near Algiers. Although usually migratory in their habits, many of these birds remain throughout the winter in the vicinity of their breeding-places. In their deportment they remind us of our own Water-hens, but they have a prouder gait, and step with greater freedom.

Their toes spread out so widely that they cover a considerable surface, and each stride is accompanied with a jerking movement of the tail; they are able, moreover, half fluttering and half running, to make their way over a floating surface of aquatic plants. They likewise swim with considerable facility, lying lightly upon the water, and as they row themselves along, constantly bow with their head, as though keeping time with the strokes of their feet. When upon the wing, the beauty of their plumage is fully displayed; their flight, however, is inelegant, they rise unwillingly into the air, and fluttering onwards, fall quickly to the ground, always, if possible, among high reeds, sedge, or rice, amongst which they at once hide themselves. During flight, their long legs hang down behind, and render them easily recognisable at a distance. Their voice somewhat resembles the cackling or clucking of a Hen, reminding us at the same time of that of the Water-hen, but it is of stronger and deeper tone. Like the rest of the family, which it closely resembles in its general habits, this species eats the tender shoots of young corn, grass, and various kinds of grain. When the breeding season approaches, the mated pairs generally resort to rice-fields, and settle down in some place of concealment among the reeds and rushes. Their nest, which floats upon the top of the water, is but a rude agglomeration of dry grass, rice-straw, reeds, and other similar materials. In this roughly-constructed cradle, the female about the end of May lays from three to five eggs, of somewhat elongated shape, with a smooth polished shell, the ground colour of which is dark silvery grey or reddish brown. When first hatched the young are dressed in a suit of dark grey down, their beak, forehead, and legs being of a blueish tinge. They soon learn to swim about and to dive, but their parents continue to watch over them for a considerable period with great tenderness. According to Jerdon, this species is said to destroy large numbers of Wild Ducks' eggs, by sucking them; and one of these birds has been seen to seize a duckling in its huge foot, crush its head, and eat out the brains, leaving the rest untouched.

THE PURPLE GALLINULE.

The PURPLE GALLINULE (*Porphyrio chloronotus*) is indigo-blue upon the nape and fore-part of the wing, and bright blue on the front of the neck. The breast is indigo-blue, gradually shaded to a slaty-black on the belly. The mantle is dark green. The eye is yellowish brown, the beak blood-red, and the foot brick-red. This species is seventeen inches long and thirty broad. The Purple Gallinule is principally found in the lake districts of Lower Egypt, its presence extending thence east over Syria and the region watered by the Euphrates. As far as our observations enable us to judge, it is a bird of passage, and makes its appearance in Egypt about the end of April, leaving that country in September. It does not, as far as we could learn, ascend the Nile, nor did we ever see it in the countries through which the Upper Nile passes. Its general habits closely resemble those of the species above described.

The WATER-HENS (*Stagnicola*) are recognisable by the structure of their beak, which is of conical form and compressed at its sides, its base being prolonged over the forehead, and its cutting edges finely denticulated. The feet are large, with long toes, furnished at the sides with broad, web-like folds of skin; the wings are broad and obtuse, the third quill being the longest; the tail is short, and formed of twelve feathers. The plumage is thick and luxuriant.

These birds are more aquatic in their habits than the Rails; they swim with great facility, disporting themselves upon the surface in a singular manner, and continually striking the water with their tails. When approached or alarmed, they have recourse to diving, employing their wings to assist their progress under water, or take flight, skimming along close to the surface till they reach a place of shelter. On the land they move with ease, whisking with the tail at intervals as they walk, and are enabled by the compressed shape of their bodies to run rapidly through coverts or

thick herbage. From the length of their toes, they can also walk over considerable spaces of still waters, supported on the floating foliage of aquatic plants. The borders of rivers and lakes are their favourite resorts, especially when the current is slow and deep, and the stream bordered with rocks and herbage, as the latter affords a safe shelter during the day. The food of these birds consists of slugs, worms, and insects, together with various kinds of grain and vegetable matter. The nest is a thick mass of interlaced grasses, rushes, and flags, and is generally placed in a retired spot among the reeds by the water-side.

THE COMMON GALLINULE, OR MOOR-HEN.

The COMMON GALLINULE, or MOOR-HEN (*Stagnicola*, or *Gallinula chloropus*), is, notwithstanding the plainness of its attire, a very beautiful bird. The plumage of the back is dark olive-brown, elsewhere dark slate-grey; the thighs are spotted with white, the region of the vent is pure white. The colour of the eye is peculiar; immediately round the pupil is a circle of yellow, to which succeeds a second of green, while a third exterior ring is red. The beak towards its base is vermilion-red, towards its apex yellow; the foot greenish yellow. The length of this bird is twelve inches, its breadth twenty-three inches; the length of the wing seven inches and a half, and the length of the tail three inches and a half.

The habitat of the Moor-hen extends all over Europe and a considerable portion of Asia, but it is seldom seen in Africa. In Europe, with the exception of the high northern latitudes, it is everywhere common. In England it is met with at all seasons, whilst in Germany it is a bird of passage, arriving about the end of March, and departing in October; some few, however, remain all through the winter. These birds generally travel by night, and probably on foot, at least some of them have been captured under circumstances that lead to such a supposition. In early spring they usually arrive in pairs, in the vicinity of their breeding-places, but occasionally they come singly, Naumann, who watched a pair of Moor-hens from his garden for several consecutive years, sometimes observed that the males and sometimes the females appeared first; on one occasion the female came alone, and seemed to use her best endeavours to get a partner to join her, but in vain, until at length, after a fortnight's sojourn, she disappeared. On another occasion the male arrived by himself, and seemed by no means to consider his solitary condition as one of single blessedness; day and night he reiterated his call-note, almost without intermission, and sometimes in such a pitiable tone that it was almost distressing to hear him, until at length, on the fifth evening, his anxiously looked-for mate arrived, and put an end to his love-lorn suspense. When a pair has once taken possession of a suitable pond they are silent, but if a female is first upon the spot, she seems to invite any passing male to join her. The individual so invited frequently flies around her in wide circles, as though bethinking himself what he should do; generally, however, he is content to pursue his journey alone, as is made manifest by the renewed solicitations of the female.

Slow waters, the margins of which are thickly covered with sedge and coarse grasses, or at least with reeds and brushwood, and partially overgrown with floating herbage, afford the requisite conditions for their residence. Each family of Moor-hens seems to prefer having a whole pond to itself, and it is only on extensive pieces of water that several pairs are to be met with, and even in this case each pair strives jealously to keep possession of its own territory. There is something particularly pleasing in the appearance of these graceful and well-proportioned birds when undisturbed in their quiet pools. As they move, the points of their wings cross each other, and their tail, held perpendicularly upwards, is constantly kept moving in little jerks, their neck being bent into the shape of the letter S, and their body laying horizontally on the water. Occasionally they come on dry land to obtain a little repose, either on a tuft of weeds, or on the bough of a tree, or sometimes

on a piece of floating wood. Here they employ themselves in preening and oiling their feathers, preparatory to taking another swim, or to ensconcing themselves among the rushes and thick grass. Their narrow and apparently compressed bodies enable them to make their way with facility over weeds and leaves floating upon the top of the water. Upon firm ground they move lightly and gracefully, with long and measured steps, and should they be suddenly surprised, they will rise and fly to their pond, with a flight somewhat resembling that of a Barn-door Fowl. When on the water their



THE HYACINTHINE PORPHYRIO (*Porphyrio hyacinthinus*). ONE-FOURTH NATURAL SIZE.

power of diving is extraordinary; at the slightest appearance of danger they vanish like lightning, and having plunged beneath the surface, use both wings and feet to row themselves along. Should they under these circumstances be forced to come up again to breathe, only the beak is protruded, and that under the protecting shelter of a tuft of herbage.

The nest is usually placed among reeds on the ground, sometimes on the bank at the edge of the pool, occasionally among roots of trees, or long grass, or on branches overhanging the river, when there is danger of the water rising and overwhelming the nest. This instinctive forethought is, however, equalled, if not surpassed by the ready ingenuity of these birds when such a danger unexpectedly arises, as the following account by Mr. Selby will show: "During the early part of the

summer of 1835, a pair of Moor-hens built their nest by the margin of the ornamental pond by Bell's Hill, a piece of water of considerable extent, and ordinarily fed by a spring from the height above, but into which the contents of another large pond can be occasionally admitted. This was done while the female was sitting; and as the nest had been built when the water-level stood low, the sudden influx of this large body of water from the second pond caused a rise of several inches, so as to threaten the speedy destruction of the eggs. This the birds seem to have been aware of, and immediately took precaution against so imminent a danger; for when the gardener, seeing the sudden



HOME OF THE MOOR-HENS (*Gallinula chloropus*).

rise of the water, went to look after the nest, expecting to find it covered, and the eggs destroyed, or at least forsaken by the hen, he observed, while at a distance, both birds busily engaged about the brink, where the nest was placed, and when near enough he clearly perceived that they were adding, with all possible dispatch fresh materials to raise the fabric beyond the level of the increased contents of the pond, and that the eggs had by some means been removed from the nest by the birds, and were then deposited upon the grass, about a foot or more from the margin of the water. He watched them for some time, and saw the nest rapidly increase in height, but I regret to add that he did not remain long enough, fearing he might create alarm, to witness the interesting act of replacing the eggs, which must have taken place shortly afterwards, for upon his return in less than an hour, he found the hen quietly sitting upon them in the newly-raised nest. In a few days afterwards the young were

hatched, and, as usual, soon quitted the nest and took to the water with their parents. "The nest," continues Mr. Selby, "was shown to me soon afterwards, and I could then plainly discern the difference between the new and the older part of the fabric."

The construction of the Moor-hen's nest is a serious operation, in which both parents assist. The materials made use of are leaves of various kinds, both dry and fresh; these are piled upon each other, sometimes apparently in a very slovenly manner, but at others with more care, so that when completed the structure looks like a coarsely-made basket of leaves, in the centre of which is a basin-shaped depression, wherein the eggs, from seven to eleven in number, are deposited in the course of about a fortnight. The eggs are of moderate size, the shells hard, fine-grained, and smooth, but dull-looking. Their colour is pale rusty yellow, spotted with violet-grey and ash-grey, and besprinkled with cinnamon and reddish brown specks. Both sexes take a share in the incubation of the eggs, which are hatched after the lapse of twenty or twenty-one days. The young remain in the nest about twenty-four hours after their escape from the egg, at the end of which time they are introduced by their mother to their new element, the water, to which they are heartily welcomed by their male parent. The family now begins to be a very interesting spectacle; the young brood swims about, closely following the movements of the old birds, all of them eagerly watching for worms or insects that their affectionate caterers pick up for them; and as soon as they see one caught, all simultaneously rush forward to obtain the coveted morsel. After a few days, however, they learn how to obtain their own food, although they are still carefully watched and protected from danger. At the slightest warning they vanish; indeed, it is wonderful to see the celerity of their movements. In about a fortnight they are able to shift for themselves, and their elders begin to make preparations for rearing a second brood, which, after the lapse of a few weeks, make their appearance upon the water, and the scene we have just described is enacted over again, but with additional circumstances that make it still more interesting. By the time the second family show themselves, those of the first brood are half grown up, and might be supposed to trouble themselves very little about the additional members of their family; such, however, is by no means the case; small and great, old and young, seem to meet each other in the most affectionate manner. The half-grown birds at once begin to share with their parents the labour of providing for their new brothers and sisters, to whom they bring food in their beaks, and watch over them with the greatest assiduity, just as their parents had done to them a few weeks previously. As the number of the second brood is usually smaller than that of the first, and the parent birds are not a bit less assiduous in helping their younger than they were in providing for their elder children, the latter grow rapidly; they generally swim in the middle of the little flock, and are fed and cared for by all.

The COOTS (*Fulica*) are distinguished from the above birds by the structure of their feet, the Water-hens having the toes bordered by simple folds of the integument, whilst in the Coots these membranous folds are scalloped, and more elaborately constructed. In conformity with such enlargement of their feet, which make excellent oars, the members of this group spend more of their time in water than on land. During the course of the day, however, they frequently come on shore in order to repose and preen their feathers. Upon level ground they run with considerable facility, and in their powers of diving might compete with many of the really web-footed birds. If alarmed, they at once plunge to a very considerable depth, and when under water, row themselves along by means of their feet and wings for a considerable distance before again rising to the surface. It is probable that during these immersions they obtain the greater part of the larvæ, worms, mollusca, and vegetable matter on which they principally subsist. Although the flight of the Coots is somewhat superior to that of the Common Gallinules, they but seldom take wing, and when about to do so are compelled to run

before rising into the air, in order to obtain sufficient impetus. Should they endeavour to take flight from the water, they are obliged to flutter along for some distance, striking the surface with the soles of their feet, and splashing along in such a noisy manner that they may be heard at a considerable distance. No sooner have a pair of Coots selected a pond for their residence than they immediately set about the important work of building their nest. On large sheets of water, on which several couples may have taken up their abode, this business is by no means an easy task, as many battles must be fought before the question of appropriated territory is satisfactorily settled; indeed, in localities where many of these birds have congregated, their shrieking, splashing, and flying about seems interminable; no sooner does one pair encroach upon the domain of another, than the invaded male at once hastens to the combat, and furious encounters take place, until the enemy is fairly driven away. Sometimes these engagements afford a very interesting spectacle. The battle-field is generally some quiet creek, in which the birds swim around each other, using the arms with which Nature has provided them with all their might, hacking with their bills, striking with their wings, and kicking with their feet, until one or other is compelled to yield. These affairs settled, the labour of building is at once commenced. The nests are placed near the water, either amidst or upon aquatic plants that there abound; sometimes they are raised upon a bed of reeds or similar matter, or float upon the surface of the pool. The foundation of the nest is generally laid with dry reeds and stubble, while the upper part is formed of finer material and more carefully arranged, the interior is snugly lined with soft hay, rushes, and leaves. The eggs, from seven to fifteen in number, are smooth-shelled, but lustreless. The female does not begin to sit until the last egg is laid; the young make their appearance in about twenty-one days; when first hatched they are beautiful little creatures, clad in dark-coloured down, with flaming red heads. They at once betake themselves to the water, where they are carefully fed, tended, and valorously defended by both the parent birds. At first they seem to prefer to keep themselves hidden among the reeds, but at night they retire to the nest. As they get stronger they become more independent, and even before they are fully fledged are well able to provide for themselves. Although the flesh of the Coots is scarcely eatable, they are nevertheless frequently killed for the sake of the sport. In Italy great numbers are caught by means of nets, and they are commonly sold in the markets at a very low price.

THE COMMON COOT.

The COMMON COOT (*Fulica atra*) very closely resembles the Water-hens, except in the peculiar construction of its feet. Its body is powerfully framed and slightly compressed at the sides; the neck is of moderate length, and the head rather large; the beak is conical, compressed at the sides, and has its sharp cutting margins slightly denticulated. The callosity upon the forehead is large; the foot moderately high, strong, compressed at the sides, and furnished with long toes, each of which is fringed laterally with a broad expansion of the skin divided into lobes. The wings are of moderate length, with their second and third quills longer than the rest; the tail consists of fourteen or sixteen quills, and is very short, being almost entirely hidden by its covers. The plumage, which is of extraordinary thickness, is almost entirely of a uniform slaty-black; the head and neck, however, are darker, and the breast and belly lighter than the rest of the body. The eyes are light red, the beak and callosity on the brow pure white, and the feet lead-grey, merging towards the heel into a reddish green. In young birds the plumage on the under side of the body is light grey mixed with black, and the mantle tinged with an olive shade. This species is eighteen inches long, and thirty broad; the wing measures nine, and the tail three inches.

The Common Coot is a native of Europe, and is met with in all parts of that continent; it has also been seen during the winter in Central Asia, and the interior of Africa. In Germany it is found

on every piece of water adapted for its residence, and is abundant in England on all fresh-water lakes. In the choice of a locality it seems to avoid streams and rivers, as also salt water, but readily takes up its abode near still deep water, the margins of which are fringed with sedges and tall reeds. For their winter quarters, these birds resort to the extensive marshes of Southern Europe, and to the northern and central parts of Africa, returning to their usual haunts as soon as the snow begins to melt, and there remaining till the autumn; unlike allied species, they assemble in large flocks previous to commencing their migrations. The food of the Common Coot consists of shelled molluscs, worms, larvæ, and a variety of vegetable substances; in southern climates we are told they sometimes visit the corn-fields in order to devour the grain. We are not inclined to question this statement, as we have not only seen them eat corn with avidity when in a state of captivity, but appear to prefer that diet even when fishes were offered them. The nests of this species are large, and, though clumsily formed, are strong and compact. So remarkable, indeed, is the strength of these apparently careless structures, that Mr. Hewitson tells us, upon one occasion when standing up to his knees in water, a nest made of flags and broken reeds afforded him a firm seat. The eggs are of a pale yellowish brown, delicately spotted with dark ashy green, and marked with brown. The Coot when properly prepared before roasting is tolerable eating, otherwise, it becomes imbued with a fishy flavour owing to an oil which exudes from the skin when cooking. During the winter great numbers are killed upon the coast while roosting on the sand-banks.

The FINFOOTS (*Podocæ*), a group of birds inhabiting South America and Senegal, present many difficulties in their classification, although, judging from their structure generally, and more especially from the formation of their skeleton, they show the closest relationship with the Coots. Their toes are not exactly webbed, but furnished with broad lateral membranes admirably adapted for swimming; their bodies are small and slender, but strongly built; their long neck curves gracefully; their wings are weak and their tail strong and broad. The beak, which is about the same length as the head, is thin and feeble, slightly arched along the line of the culmen, but without any callous prolongation on the brow. The legs are very stout and feathered to the tarsus; the front toes exceed the tarsus in length, and are furnished, as we have said, with lateral folds which perform the office of a web; the hind toe is small and without any appendage; in the wing the second and third quills are longer than the rest; the tail is composed of eighteen feathers, which are slightly rounded at their extremities.

THE SURINAM FINFOOT, OR PICAPARE.

The SURINAM FINFOOT, or PICAPARE (*Heliornis Surinamensis*), has the head and upper neck black; the back, wings, and tail are brown; a stripe over the eye, the throat and front of neck are white; the breast and belly yellowish white. The eye is brown, beak pale greyish yellow with brown base and black point; in old birds the bill has a red shade. The feet are yellowish red, the inner and hinder parts of the tarsus black, and the toes marked with a black band over every joint. The length of this bird is twelve inches, breadth sixteen inches, length of wing five and a half inches, and tail three and one-sixth inches. According to observations made by the Prince von Wied, the Picapare is to be met with in Brazil and Paraguay, its habitat extending to 25° south latitude, so that it may be said to occur throughout a considerable part of South America. It is by no means scarce upon the rivers of East Brazil, but is often overlooked, as it hides itself amongst the luxuriant vegetation that covers the shore; wherever darkness and silence favour its presence, it is always to be found. Very frequently it may be seen sitting on a thin branch, partially immersed in the water, and occupied in bowing its head in a most peculiar manner. Its food consists of aquatic insects and seeds, in search of which it occasionally plunges its head under water. Its voice, which is emitted from the

throat, somewhat resembles the barking of a little dog. We learn from the same authority that the young of these birds are only two in number, and are reared during the hot season. At first they are nearly naked, and hide themselves under the wings of their parents, holding themselves on by means of their beaks; when they have grown a little stronger, they may be seen sitting upon their mother's back, and even accompanying her in her dives under water. If alarmed when with its young, the Picapare at once takes wing, and betakes itself to the shelter of the thick bushes that cover the shore; if still further pressed it hides among rushes and reeds until the danger is passed. It seems only to dive when seriously alarmed, as for example, when shot at; on such occasions it will remain under water for a considerable space of time; its powers of diving, however, are far inferior to those of many water birds.



THE STILT BIRD (*Charadrius himantopus*).

THE SWIMMERS (*Natatores*).

BUT little difference of opinion exists among naturalists as to the limits of our last order; indeed, a swimming bird is at once recognisable by characters so sharply defined that there is scarcely room for doubt or hesitation. The grand character whereby they are all distinguishable is to be found in the structure of their feet, the toes of which are more or less completely united to each other by a broad web by which they are converted into paddles, admirably adapted to propel them through their appropriate element. Hence they swim with facility, and frequent rivers, lakes, and seas. Generally speaking, the *Natatores* move awkwardly on land, as, in order to render the strokes of their paddle-like feet more effective, their legs are placed more or less behind the centre of gravity, so that when on the ground they have, in a great measure, to retain their balance by muscular exertion, as may be seen in the Goose or Swan as they waddle clumsily over the grass. In some cases these birds are compelled to assume an upright attitude, as do the Auks and Penguins. In the structure of the feet important differences are observable, generally only the three front toes are connected together by the web, but occasionally the hind toe is likewise included in the expansion of the skin, or is provided with lateral appendages that materially enlarge its surface. The form of the body in the swimming birds is boat-like; in those that dive, the ribs are strong and carried back, so as to almost entirely surround the enclosed viscera, and thus defend them from undue pressure. Their plumage is dense, close, and waterproof, consisting of a thick under garment of down overlaid with broad flat feathers, which throw off the water as if their surface were oiled. In many groups the neck is very long and the tail very short, while in others the tail composed of rigid quills is employed as a rudder when the birds are diving. Some are utterly incapable of flight, and use their wings in the water as though they were fins. The members of this order live almost exclusively upon animal food, only a few preferring a vegetable diet. All, without exception, are sociable in their habits; most of them exceedingly prolific, some species, however, lay but one egg. Frequently they crowd their favourite breeding-places in great numbers, and are devotedly attached to their offspring; some will even incubate eggs, and rear young that are not their own.

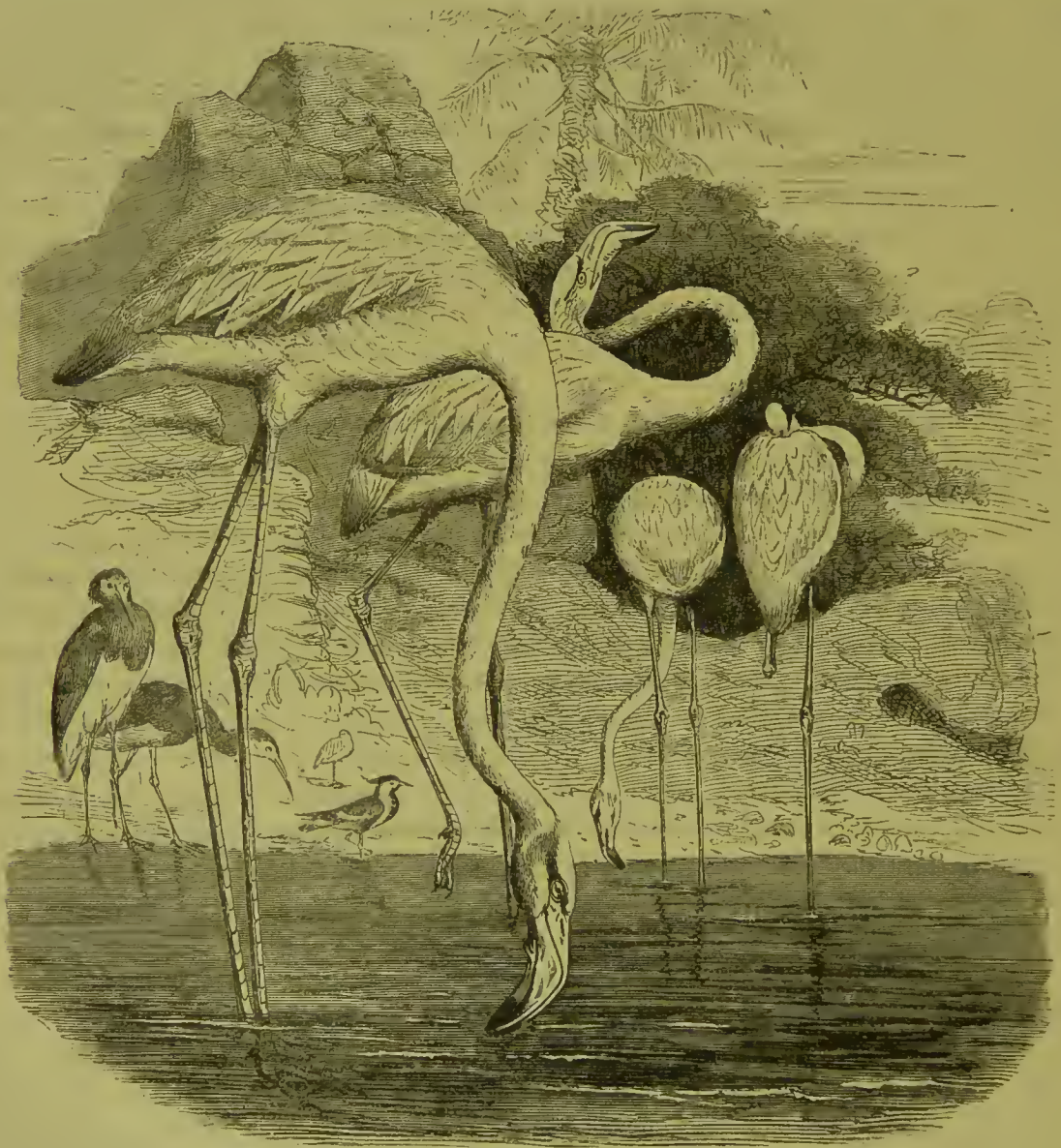
THE SIEVE BEAKS.

THE SIEVE BEAKS (*Lamellirostris*), according to our usual plan, are placed at the head of the Natatorial order, as in these TOOTH-BILLED and SOFT-BILLED SWIMMERS, as they have been called by various writers, the peculiar attributes of Swimming Birds are most equally developed, and their locomotive capabilities most varied. Whoever examines a Duck with attention, will appreciate the leading features whereby the *Lamellirostris* are distinguished. Their bill is generally depressed, broad, and always laminated at the sides; the lamination being more prominent in some species than in others, but always so arranged as to form a sieve-like apparatus, by means of which these birds obtain their food, in a manner peculiar to themselves. This remarkably constructed beak, which is seldom longer than the head, is usually straight, broad, and flatly arched above, terminating in front in a broad nail-like appendage, while at the sides it presents a series of horny laminae, which interlock with similar developments from the under jaw. With the exception of the margins, which are tolerably hard, the entire beak is covered with a soft skin, and is largely supplied with branches of the fifth pair of nerves,

so as evidently to be endowed with great sensibility, as is likewise the tongue, which is large and fleshy except at its sides, which are fringed and toothed with horny ridges. When we observe the use that the Duck makes of this organ, we perceive that, unlike other birds, it discriminates its food, not by sight or smell, but by the sense of touch resident in its tongue. It plunges its beak into the mud, and brings up whatever it may happen to meet with, and from this mouthful of stuff it selects, by the aid of that member alone, whatever is good for food; while what is useless escapes through the straining apparatus at the sides of the bill. In comparison with this remarkable structure of the beak, the other characters whereby these birds are distinguishable become of secondary importance, nevertheless they also are somewhat striking. The slightly elongated body is strongly built, the neck either of moderate length, or very long and slender, the high and narrow head of medium size. The tarsus is small or moderate (or, exceptionally, very high), four-toed, and webbed in front. The moderate-sized wings are somewhat pointed; they consist occasionally of but twelve feathers, and are either truncate or rounded, sometimes wedge-shaped or pointed at the extremity. The plumage is always close, smooth, and well packed with down. The distribution of the various races of these birds is more limited than that of many Natatorial families, and some of them at certain seasons migrate regularly from colder to warmer climates, and *vice versâ*.

The FLAMINGOES (*Phenicopteri*), notwithstanding their extraordinary length of leg and neck, which have induced some authors to class them with the Wading Birds, are, both in their general structure and mode of life, most undoubtedly to be regarded as members of the present order, and are, as their internal anatomy teaches, very nearly related to the Swans. Their body is slenderly built, neck very long, head large, and the wings, in which the second quill is the longest, of moderate length; the tail, which consists of twelve feathers, is remarkably short. The peculiarly constructed beak is somewhat longer than the head, higher than broad, but thick and bent down towards the middle, at an obtuse angle. The upper mandible, which is much smaller and feebler than the lower, is remarkably flat; both mandibles are provided at their circumference with the lamellated sieve-like structure characteristic of the *Lamellirostræ*. The whole apparatus very much resembles a box, of which the lower jaw forms the body, while the upper mandible constitutes the lid. This extraordinary bill is covered with soft skin, but is hard at its apex, and towards its base presents a soft cere. The legs, which are most disproportionately long and slender, are denuded of feathers for a considerable distance above the heel; the three front toes are of moderate length, and connected by a broad, slightly-excavated web. The hind toe, which is considerably elevated, is short and feeble. The thick, compact, soft plumage is beautifully coloured, and is exactly comparable to that of other Swimming Birds. The internal structure of the Flamingo has been carefully studied by Wagner, and found to correspond in every particular with that of the Ducks (*Anatidæ*). Naturalists are at present acquainted with about half a dozen species belonging to this group, and although the history of some of them is far from complete, enough is known to induce us to believe that in their mode of life they differ in no respect from the species with which we are best acquainted. These remarkable birds are widely distributed over the warmer portions of the globe, and are met with principally in Asia, Africa, and South Europe. According to the accounts of both ancient and modern writers, they make their appearance every year in great numbers in the vicinity of the lakes of Sardinia and Sicily, as also in Albufera de Valencia, and other parts of Spain. Along the coasts of Egypt, Tripoli, Tunis, Algiers, and Morocco, they are abundant, as also in Smyrna, and near the banks of the Volga, but are very rarely met with in Greece. Occasionally a few stragglers have been seen as far north as the banks of the Rhine; generally speaking, however, the south coast of Europe must be regarded as their northern limit, and North Africa and Central Asia as their usual habitat. Those species that

inhabit the Western Hemisphere are likewise confined within corresponding limits. Lakes of salt or brackish water in the vicinity of sea-coasts are the favourite resorts of the Flamingoes. To lakes of fresh water they are only casual visitants, and never resort to them for any length of time. On the other hand, they are always very abundant on the sea-coast, more especially where the shores are flat and swampy. All are birds of passage, and the migrations of some occur with such regularity



THE FLAMINGO (*Phœnicopterus roseus*).

that the period of their return may be predicted with tolerable accuracy. According to Cetti, Flamingoes appear in Sardinia about the middle of August, and depart thence in March or the beginning of April. In South Italy they are stationary, remaining in the same locality all the year round. Only those who have had the good fortune to see these birds assembled in flocks, consisting of many thousands, can form an adequate idea of the beauty of their appearance. "Looking from Cagliari to the sea," says Cetti, "it seemed to be banked in with a wall of red bricks, or to be covered with countless numbers of roses. On nearer approach these proved to be Flamingoes ranged

in regular ranks. Aurora herself was never adorned with more roseate tints than the wings of these birds, they seemed literally to glow with pink and carmine. The name of the Flamingo, both in Greek and Latin, was derived from the magnificent hues of their glorious wings, and the French in the epithet *flamman* only repeat the same idea. The first impression produced by such a spectacle is not easily to be forgotten ; the birds stood in ranks, not merely of thousands, but literally of hundreds of thousands, ranged in interminable array. As the sunlight played upon the dazzling white and glowing red, the effect was indescribable ; at length, taking alarm at something, the whole body of them rose into the air, displaying their wings to still greater advantage, as they formed themselves into an immense wedge-shaped phalanx, and winged their way far up into the blue sky." When standing quietly upon the shore, the appearance of these birds very much resembles that of an army drawn up in order of battle ; the Cingalese call them "English soldier birds," the South Americans simply "soldiers," and indeed not without cause, for, as Humboldt informs us, the inhabitants of Angostura, soon after the establishment of that colony, were one day thrown into a state of great alarm by the sudden appearance of what they took to be a numerous army, and it was only when the supposed enemy took flight to the shores of the Orinoco, that they discovered their mistake. A solitary Flamingo is very rarely seen, never perhaps before the commencement of the pairing season, and even then it must be some young bird that has strayed by accident from its fellows. Usually they keep together in flocks, and carefully avoid any locality where danger might be apprehended. Open waters are usually selected as their fishing-place, and should a boat approach they at once take flight whilst it is still far off, so that it is by no means easy to observe their proceedings, except with the aid of a telescope. In general they may be seen with their legs immersed in the water, or more rarely on the dry shore or on sand-banks with their necks curved in a very peculiar manner (see page 116) in front of the breast, the head being laid as it were upon the back, or buried beneath the shoulder-feathers of the wing ; generally the whole weight of the body is supported by one leg, the other being held obliquely backwards or drawn up close to the body ; in this strange position the Flamingo sleeps. The manner in which these birds obtain their food is equally remarkable. Like all other sieve-beaked birds, the materials upon which they subsist are procured by raking in the mud. The Flamingo when in search of food, wades into the water to a convenient depth, and then bends down its long neck until its head is upon the same level as its feet ; it then plunges its beak, with the upper mandible downwards, into the mud. In this position the bird rakes about at the bottom of the water, moving backwards and forwards with short steps, and opening and shutting its bill whilst its tongue is busily at work. In this manner, by the delicate sense of touch resident in that member, the Flamingo examines the contents of its mouth, retaining what is useful as food, and straining out through the sieve-like apparatus the mud or non-nutritive materials with which it is accompanied. Meanwhile, by the movements of its webbed feet, it is continually stirring up the bottom, and thus putting in motion all the little aquatic animals of which it is in search. The gait of the Flamingo very much resembles that of the Long-legged Waders, but is not exactly similar, although the difference is not easily described. Its steps are longer, more regular, and more vacillating, as might be expected from the extraordinary length of its legs, but at the same time its movements are easy, and differ widely from the accounts given of them by some writers, who tell us that when walking it is compelled to help itself along by its beak. Its beak, however, is occasionally employed to assist it in its movements, as for example, when having bent its legs under its body it lies down upon the ground to rest, and is suddenly obliged to rise from this position, the bill is employed to assist in getting up, but this once accomplished it runs away with tolerable speed in the manner above described. When taking flight from the sea or lake in which it has been feeding, it not unfrequently goes to a considerable distance, half running and half flying over the surface of the water, much after the manner of a Duck or Water-hen. In deep

water it also swims apparently without the slightest effort, and although its progress may be somewhat slower than that of the Short-legged Swimmers, it is evidently more enduring. Its flight, when once it has raised itself out of the water in the manner above described, is light and tolerably rapid, the quick strokes of its wings producing a noise not unlike that which accompanies the flight of Ducks and Wild Geese, indeed, the sound made by the rising of a whole flock has been compared to distant thunder. When fairly on the wing a flying Flamingo could not be mistaken for any other bird, even by the most unpractised novice. Unlike the generality of long-necked birds, it stretches not only its long legs, but its neck straight out, thus presenting an appearance of extraordinary length and slenderness; so that, with its narrow wings exactly in the centre, it assumes pretty much the shape of a cross. When flying together in considerable numbers, the flock, as we have already said, arrange themselves in regular phalanx, either in one long line, or in a wedge-shape like that of the letter V. When descending from a great height, their flight assumes a spiral direction, but just before alighting they sweep forward for a little distance over the water until they find a suitable spot whereon to settle. The loud harsh voice of these birds somewhat resembles that of a Goose. The food of the Flamingo consists principally of water-snails, worms, crustaceans and small fishes, but it by no means despises vegetable substances, and in a state of captivity will eat boiled rice, corn, or soaked bread. Our information concerning the breeding of these birds is not very satisfactory. Labat many years ago gave a very strange description of their mode of incubation, which was subsequently contradicted by Dampier; and later writers have contented themselves with copying these accounts without ascertaining their accuracy. Dampier informs us that "the Flamingoes build their nests where plenty of dirt is procurable. This dirt they rake together by means of their feet, so as to form a hillock, which stands like a little island, a foot and a half above the water, each hillock being of a conical shape, and having a depression at the top, on which the nest is placed." Labat states that the hillocks are solid, as high as the surface of the water, but that above this point they are hollowed like a basin, and that when the birds lay or incubate their eggs, they place themselves upright, not upon the hillock, but close to it, with their feet upon the ground, in such a manner, that leaning against the hillock they cover the nest with their tail. Naumann in the strongest terms refuses to believe either of the above accounts, and from our own observations on the living birds we ourselves quite acquiesce in the doubts he expresses. It is true we have never seen a Flamingo actually engaged in incubating; but at Mensala, in Egypt, where we obtained a full-grown egg from the oviduct of a dead female, we procured the following information concerning the mode of incubation. The Flamingo makes her nest in shallow places in the water, or, as the Arabs assert, upon flat insular spots, overgrown with low vegetation. In the first case the nest is a conical heap of mud scraped together by the feet of the bird, and raised so high that its top is a foot and a half above the water. In the second case it consists of a mere hollow trough, scooped out in the soil and lined with sedge, rushes, grass, and similar materials. The number of eggs laid is generally two, occasionally three. Their shape is elongated, and their shell smooth and of chalky whiteness. The bird when brooding most undoubtedly sits upon her eggs in the usual manner, bending her legs beneath her, and lying flat upon the nest. The duration of incubation is stated to be from thirty to thirty-two days. The young when hatched immediately betake themselves to the water, and swim from the day of their birth. They soon learn to run, but are not capable of flight till a lapse of several weeks. The chase after Flamingoes requires considerable caution. In the day-time they are so timid that it is almost impossible to get within gunshot of one of their numerous assemblages, seeing that while feeding they invariably station some of the older members of the flock to warn them of the approach of danger. The Arabs informed us, however, that they may be procured in considerable numbers by a very simple contrivance. The plan adopted in Egypt is to suspend ordinary fishing-nets between two boats, and in this manner to sail

directly towards the sleeping-place of the birds ; thus suddenly awakened, the Flamingoes fly against the nets, in which they are easily captured, and in this manner fifty or sixty are sometimes taken at once. The fishermen on the Lake of Mensala adopt a still stranger plan : after having, by carefully watching a flock, discovered where the sentinels are placed (the latter always remain bolt upright, whilst the rest of the flock sleep with their heads under their wings), a naked fisherman, having his head covered with a bundle of grass or reeds, swims or creeps towards the unsuspecting birds, and suddenly seizing the sentry, plunges his head under water, and breaks his neck before an alarm can be given. The sleepers then become easy victims. This latter account we should certainly not have credited without corroborative evidence. In North Egypt, however, dozens of these beautiful birds may be seen exposed for sale in the markets, where they are eagerly bought for the table ; their flesh is excellent, and quite devoid of the oily flavour which we fully expected would have rendered it unpalatable.

The SWANS (*Cygni*), from their proud looks and majestic demeanour, must ever hold a conspicuous position in the order to which they belong. Their imposing size and elegant appearance at once rivet attention, and closer examination shows that amongst Lamellirostral birds they form a sharply-defined group, easily distinguishable from the Ducks and the Geese, with which they have been sometimes associated. Their body is elongated, their neck very long, and their head moderate. Their beak is straight, of equal breadth throughout, rounded in front, and at its base naked and protuberant. The upper mandible is flatly vaulted above, and terminates anteriorly in a roundish nail. The length of the beak is pretty nearly the same as that of the head ; the legs are short, and placed very far back ; the middle toe is longer than the tarsus, and the hinder toe, which is small and feeble, is so much elevated that in walking it does not reach the ground ; while the web connecting the three front toes is remarkably broad and complete. In the construction of the wing, the relative proportions between the bony framework and the quills is deserving of notice, the former being very long, the latter somewhat short, while the primary quills, of which the second is the longest, are scarcely longer than the secondaries and the tertiaries. The tail consists of eighteen or twenty graduated feathers. On the under surface the plumage is thick and fur-like ; on the upper side, on the contrary, the feathers are broad ; but everywhere, both above and below, the body is richly covered with down.

With the exception of the equatorial regions of our globe, Swans are to be met with in every climate, but they principally abound in temperate and cold latitudes. In Asia and Europe three species are met with, which occasionally extend their winter visits as far as North Africa. Two of these species are likewise met with in America, together with several others that are peculiar to that continent ; while at least one other very conspicuous species is an inhabitant of Australia. The extent over which these several kinds are spread is very considerable, and their migrations extend over a great distance. All the species are migratory, but by no means all the individuals belonging to each, seeing that there are many of them whose residence is within the limits of the temperate zone, that remain all the year round in the same locality, or at all events, content themselves with wandering to some place not very far remote from their usual residence.

The following interesting account of the migrations of these birds is given by Franklin : “ About the first of September the Swans leave the Polar Sea, and resort to the lakes and rivers in and about the latitude of Hudson’s Bay ; there they remain till October, preparing for their departure for the winter, when they collect in flocks of from twenty to thirty, and seizing a favourable opportunity, with the wind not opposed to the direction of their flight, they mount high in the air, form a prolonged wedge, and with loud screams depart for more genial climes. While making either their semi-annual transmigration, or on shorter expeditions, an occasional scream, equal to, ‘ How do you all come on

behind?' issues from the leader, which is always replied to by some posterior Swan with an 'All's well!' vociferation. When the leader of the party becomes fatigued with his extra duty of cutting the air, he falls into the rear, and his neighbour takes his place. When mounted, as they sometimes are, several thousand feet above the earth, with their delicate outline scarcely perceptible against the clear blue of heaven, this harsh sound, softened and modulated by distance, and issuing from the immense void above, assumes a supernatural kind of tone."

The permanent habitat of the Swans is always upon large lakes of fresh water, or in marshy situations where fresh water is abundant. During their migrations, however, they take up a temporary residence on water of any kind. Their nests are generally placed on rivers or fresh-water lakes, but probably this is only on account of the shallowness of such situations, as after the breeding season some betake themselves to the sea, or wherever food is most abundantly procurable. The Swans are only active in the day, and even their migrations are never carried on by night. In their locomotive capabilities they surpass most other Swimming Birds. Their domain is the water, and it is only unwillingly that they ever venture on dry land; nor do they readily take wing, unless compelled to do so by unavoidable necessity. The very backward position of their legs renders walking on land difficult, so that when on dry ground their gait is heavy and vacillating. Their flight apparently requires considerable effort, more especially when they attempt to rise from the surface of the water; when, however, they have gained a certain altitude, it is extremely rapid. It would appear almost impossible for these birds to rise from the ground, and they never venture to alight on dry land. When beginning their flight from the water, they always stretch out their necks horizontally to their full length, striking the surface with their wings, and splashing with their broad-soled feet; and thus, half flying and half walking, they proceed for a distance of from forty to eighty feet, before they can acquire impetus to enable them to mount into the air. When, however, this is once accomplished, their movements are perfectly easy and free. When alighting from their flight they glide obliquely downwards to the water, and when they have nearly reached it, spread out their webbed feet to stay their headlong career, and moderate the shock of their descent. As relates to their vocal powers, different species of Swans vary considerably; some appear to be mute, but generally speaking their cry may be said to have somewhat the sound of a trumpet, and much resembles the voice of the Cranes. Some commonly, however, only utter a loud hissing or a low muttering noise; in other species, on the contrary, the voice is loud and powerful, and somewhat varied, so that when heard from a distance its effect is by no means disagreeable. The cry of the male is always louder and of a deeper tone than that of the female. The young "pipe," like young Geese. The manners of Swans are gentle, and rather shy, nevertheless they exhibit a certain degree of vanity and consciousness of power, often manifested in their domineering behaviour towards other Water-fowl. Only those of the same species associate in large numbers, and they seem particularly jealous of intruders. The matrimonial engagements of these birds are kept with exemplary fidelity, and last throughout their lives. No sooner have they paired, than the happy couple begin to show the tenderest affection towards each other, manifested by innumerable graceful caresses; they swim together with indefatigable constancy, and should danger approach defend each other with the utmost courage and self-devotion. Their care for their young progeny is equally remarkable. Although the male does not himself actually take a share in the duties of incubation, all his energies seem to be devoted to the protection of his mate during her patient retirement, and he may at such times always be seen, either swimming proudly and defiantly around her, or reposing in the immediate vicinity of the nest, as though to cheer her confinement by his presence. Although the labour of nidification seems to devolve principally upon the female, she is eagerly assisted by her mate, whose employment seems chiefly to be the procuration of materials, which he supplies abundantly, dragging them with his beak, sometimes from

a considerable distance, or pushing them before him in heaps towards the selected locality. The nest, when completed, is a very large but inartistically constructed pile, composed of all sorts of water plants, confusedly heaped together, but surmounted with a finer covering of sedge grass and other softer materials. The place chosen for the situation of the nest is generally some small island, and its size such that it would float even with the weight of its occupants upon it. In this capacious cradle the female Swan lays from six to eight thick-shelled eggs, of a dirty white, or dirty pale green colour, from which, after the lapse of five or six weeks, the young brood make their escape. When first hatched the Cygnets are pretty little creatures, warmly clad in a thick covering of down; after having remained in the nest for a day or so, they venture out and trust themselves upon the water. Sometimes the mother carries them upon her back, sometimes takes them beneath the shelter of her wings, and always watches over them with the greatest tenderness and anxiety, until they are able to take care of themselves. No sooner, however, are they completely fledged, than they finally separate themselves from their parents, never to see them again; for should they next year make their appearance in the same locality, they would at once be driven away, and treated as any other intruders. The food of the Swans is very diversified, consisting of such vegetables of various kinds as grow in ponds and marshes, roots, leaves, and seeds, beetles and their larvæ, worms, snails, tadpoles, and fishes; anything, in short, that affords nourishment. They are not so strictly vegetable feeders as the Geese, neither are they so carnivorous as the Ducks, but in this respect they seem to occupy a middle position between the two. Their food is principally obtained at the bottom of the pond, which, owing to the length of their necks, they are able to reach, even in water of considerable depth; and here they gather aquatic plants, or, straining the mud through their sieve-like jaws, extract such nutriment as it affords.

As the Wild Swans, owing to their great size and strength, are well able to defend themselves against ordinary assailants, they have few enemies to fear, with the exception of the larger Eagles and of the arch-destroyer, man himself, who wages constant war against them, partly on account of their flesh, which affords excellent food, and partly for their feathers and down, the latter of which in particular is extremely valuable. The chase after these birds, however, requires considerable skill and perseverance, owing to their extreme watchfulness and the rapidity of their flight. In the north they are generally pursued in a boat whilst they are swimming in the water; the sportsman taking advantage of a high wind, and then steering with all sail directly towards them, in this manner he is sometimes able to approach them so closely as to get them within range of his gun, more especially as they always prefer to fly right against the wind. In Algeria, as Buvry informs us, they are taken in the same manner as the Flamingoes, by wading towards them under cover of floating herbage, or they are often captured on the shores of sheltered bays by means of hooks, and lines of camel's hair, baited with bread, flesh, or fish. When the bird has swallowed the bait, says Buvry, it must perforce remain quiet until the hunter comes to rescue it from its unpleasant position.

THE MUTE SWAN.

The MUTE SWAN (*Cygnus olor*), the species so frequently seen in this country living upon our ornamental water in a state of semi-domestication, and sometimes described by writers as the "Tame Swan" (*Cygnus mansuetus*) is, in its wild state, an inhabitant of Northern Europe and Northern Asia, more especially of Eastern Siberia, and is easily recognisable by the callous protuberance at the base of its bill. Its body is elongate, its neck extremely long and slender, and its bill, which is nearly of the same length as the head, of a red colour, surmounted at its base with the black knob-like protuberance above alluded to. The plumage of the adult is white, that of the young grey, or occasionally white. The eye is brown, the beak red, while the bridles and protuberance at the base

of the beak are black; the feet brownish or pure black. This bird is seventy inches long, and one hundred inches broad; the length of the wing is twenty-seven inches, and of the tail ten to eleven inches; the female is not quite so large. Brehm is of opinion that the Polish Swan (*Cygnus immutabilis*) of Yarrell, is merely a variety of the above species, but the following extract from a paper, read by Yarrell before the Zoological Society, will give our readers that naturalist's reasons for maintaining that these birds are not identical, although in their appearance, habits, and mode of life, they closely resemble each other. "The London dealers in birds," he says, "have long been in the habit of receiving from the Baltic a large Swan which they distinguish by the name of the Polish Swan. During the severe weather of January, 1838, several flocks of these Polish Swans were seen pursuing a southern course along the line of our north-east coast, from Scotland to the mouth of the Thames, and several specimens were obtained. The circumstance of these flocks being seen without any observable difference in the specimens obtained, all of which were distinct from our Mute Swan; the fact also that the Cygnets, as far as we observed, were of a pure white colour like the parent birds, and did not assume at any age the grey colour borne for the greater part of the first two years by the young of the other species of Swans; and an anatomical distinction in the form of the cranium, which was described by Mr. Pelerin in the *Magazine of Natural History*, induce me to consider this Swan as a distinct species, and in reference to the unchangeable colour of the plumage, I proposed for it the name of *Cygnus immutabilis*."

As additional peculiarities of this species, Yarrell notes that "the parent birds were remarkable in having the legs, toes, and their intervening membranes, of a pale ash-grey colour. The black tubercle at the base of the beak was of small size, and there was a slight difference in the nostrils, the elongated openings of which did not reach the black colour at the base of the beak." The Mute Swan, as it has erroneously been called from the fact of its possessing a soft voice very unlike the harsh tones of its wild brethren, utters a somewhat monotonous and plaintive call during the spring, or occasionally later in the season when moving about with its young. Col. Hawker, in his "Sporting Notes," describes this "Swan's melody" as consisting of two notes, C and the minor third E flat, adding that the musician he heard kept working with his head, as though delighted with the sounds he was producing. In England, where these birds live in a state of semi-domestication, they are met with at all seasons. During the period of incubation they live in pairs, and jealously drive away all intruders from the domain they have appropriated for the purpose of building. The nest, which is formed of a mass of reeds and rushes, is placed near the edge of the river or pond, or on an island, and by a most wonderful instinct is frequently raised to a height sufficient to escape a rising of the water even before man himself has observed any indication of such a danger. The eggs are six or seven in number, and have a dull greenish white shell; their length is about four inches by two inches nine lines broad. During the whole period of incubation, which lasts about six weeks, the male is in constant attendance to guard his spouse, boldly chasing off all intruders, and occasionally taking his place upon the nest. When first hatched, the young follow the mother about in the water, and are frequently carried on her back as she sails along the stream. Speaking of these birds in their wild state, Lloyd says, "In flying they make a strange appearance; their long necks protrude, and resemble at a distance long lines with black points; their heavy bodies and triangular wings seeming mere appendages to the prolonged neck. When thus in motion, their wings pass through so few degrees of a circle that, unless seen horizontally, they appear almost quiescent, their movements being widely different from the semicircular sweeps of the Goose. The Swan, when migrating, with a moderate wind in its favour, and mounted high in the air, travels at the rate of one hundred miles or more an hour. I have often timed the flight of the Goose, and found one mile a minute a common rapidity, and when the two birds, in a change of feeding ground, have been flying near each other, the Swan invariably passed with nearly

double the velocity." The Mute Swan was first brought to England from the island of Cyprus by Richard I., and is still regarded as a royal bird which no subject can claim when kept in a public river, except by permission of the crown. Formerly, when this permission was accorded, a Swan mark was granted in order to identify the property of the persons so endowed. In the days of Queen Elizabeth it was ordered that all Swans in the Thames and its tributaries should be "upped," *i.e.*, taken up and marked on the skin of the bill on an appointed day in the presence of the king's Swanherd. This ceremony, known to us as "Swan hopping," was performed annually, until quite recently, upon the first Monday in August. The flesh of this Swan was formerly highly esteemed, and was served as one of the principal dishes on state occasions. The value of one of these birds in the reign of Edward III. may be estimated by the fact, that while the best Capon sold for sixpence, the best Hen for fourpence, and twelve eggs for one penny, the price of a Swan was fixed at four shillings, and the poulterers were forbidden by proclamation to exact a larger sum. The late Bishop of Norwich gave Mr. Yarrell the following account of the manner in which young Swans were formerly fed at Norwich for the table: "The town clerk," he says, "sent a note to the public Swanherd, and to the members of the Corporation there who had Swans and Swan rights. On the second Monday in August the Swans were collected in a small stew or pond (the number varying from fifty to seventy). They began to feed immediately, being provided with as much barley as they could eat, and were usually ready for killing in November; these were all Cygnets. If kept beyond November they begin to fall off, losing both flesh and fat, the flesh also becomes darker in colour and stronger in flavour. A printed copy of the following lines was usually sent with each bird:—

" TO ROAST A SWAN.

" Take three pounds of beef, beat fine in a mortar,
Put it into the Swan, that is when you've caught her;
Some pepper, salt, mace, some nutmeg, an onion,
Will heighten the flavour in Gourmand's opinion.
Then tie it up tight with a small piece of tape,
That the gravy and other things may not escape;
A meal paste, rather stiff, should be laid on the breast,
And some whited brown paper should cover the rest.
Fifteen minutes at least, ere the Swan you take down,
Pull the paste off the bird that the breast may get brown.

" THE GRAVY.

" To a gray of beef, strong and good, I opine
You'll be right if you add half a pint of port wine;
Pour this through the Swan, yes, quite through the belly,
Then serve the whole up with some hot currant jelly.
N.B.—The Swan must not be skinned."

THE WHISTLING SWAN.

The WHISTLING SWAN (*Cygnus musicus*) has a more compact body and shorter and thicker neck than the *Cygnus olor*. The beak, which is without the cere, is raised at its yellow base, and tipped with black. This species is sixty inches long, and from ninety to ninety-six broad, the wing measures twenty-four, and the tail eight inches.

The Whistling Swan is a native of the colder latitudes of both hemispheres, but has been known to breed as far south as Greece. In England, where it is only a winter visitor, it is sometimes seen in large flocks, should the season be severe, but very rarely occurs in mild winters. In the eastern countries of Europe it is numerously met with.

The winter peregrinations of this bird take it at certain seasons into Egypt and Northern Africa,

as also to the north-western portions of the African continent, as for example the lakes of Morocco, Algeria, and Tunis. It also sometimes visits Spain. In an easterly direction it is to be met with in great numbers throughout the lake districts of Central Russia, and also near the mouths of large rivers, both in Southern Russia and Central Siberia. Of the Whistling Swans that breed in Iceland, few ever wander far from their native place, and this for a very simple reason, namely, that owing to the Gulf stream which sweeps through its numerous bays and creeks, and the many hot springs derived from volcanic sources, the inland lakes are kept free from ice, while in Russia the swans are all obliged to take their departure before the setting in of winter freezes the lakes and rivers.

In its general appearance the Whistling Swan bears some resemblance to the Mute or Tame Swan, but is by no means so elegant in its shape. Its neck has not the same flexibility or the same graceful



THE WHISTLING SWAN (*Cygnus musicus*). ONE-SIXTEENTH NATURAL SIZE.

bend ; nevertheless, though surpassed in grace by *Cygnus olor*, it is a very beautiful bird. The main feature in which it differs from other Swans is its loud-toned and agreeable voice. Pallas informs us that "its voice has a sound as sweet as that of a silver bell," and adds, "it sings as it flies, and may be heard at a great distance, indeed all that has been said of the notes of the dying Swan is no fable, for with its last breath the wounded 'Singing Swan' utters its song."

"The epithet *musicus*," says Faber, "is well bestowed on these birds, for when a little flock of them approaches, flying in the air, their tuneful melancholy voices sound like trumpets heard at a distance. Olaf tells us, "when a company of these birds passes through the air, their song during the long winter nights is truly delightful, equal to the notes of a violin." "It is certain," says Arman, "that the voice of a Singing Swan has a more silvery tone than that of any other creature. When wounded, its breath produces this silver sound, so that its song is celebrated in many a Russian ballad." Oesel says, "Their song consists of two notes, which when uttered by the whole flock are

very loud, and may be heard at the distance of three English miles." "At last," says Homeyer, "I have heard the voice of the Singing Swan. Eight or ten of these birds were swimming about a hundred yards from the shore, and uttering their loud full-sounding notes. I cannot say that any melody was distinguishable; there was first a single, long-drawn, well-sounding note, followed by another in a lower key, so that altogether they formed a sound that was not inharmonious. Notwithstanding the distance at which I was, the notes were brought distinctly to my ear over the water."

Schilling expresses himself still more plainly: "When, owing to the intensity of the frost the water of the sea is frozen, and the streams everywhere converted into ice, and the Swans are thus shut out from all the shallows where they usually obtain their food, these stately birds assemble by hundreds in any patch of water that may be still accessible, and there, with melancholy cries, bewail their destitute condition. At such times during the long winter evenings, and throughout the night, I have often listened to their many-voiced lamentations, which have been heard distinctly at a distance of three or four miles. Sometimes the notes thus heard would resemble the sound of a bell, sometimes that of some wind instrument. Still it was not exactly like either of them, just as a living voice cannot be imitated by dead metal. This peculiar concert realised in my mind the truth of what I had heard concerning the song of the Swan, which I had before regarded as a poetical fiction. Indeed, in one sense it might truly be called the death-song of these beautiful creatures, for, seeing that they are quite unable to obtain their food in deep water, they must soon die of hunger, as they no longer have strength enough to fly to a warmer climate, and are thus often found starved to death and frozen upon the ice; still to the last we hear their clear melancholy voice."

From these extracts we hope the reader will be able to arrive at a more correct idea of the real character of the song of the dying Swan. The poetical notions which have been entertained upon the subject have, it appears, really some foundation, but the facts have been so distorted as to become no longer recognisable. The dying Swan, we find, has nothing peculiar in its notes, but its last cries may be as loud and musical as any others to which it has previously given utterance.

In Russia, we are told, the Whistling Swan is preferred as an ornamental bird to our Tame Swan, principally on account of the loudness of its voice.

Montagu gives the following interesting account of one of these birds which was shot at Bridgewater, and was given to him after it recovered from its wounds:—

"This beautiful and docile creature is now in high health, living with many sorts of Ducks, in the greatest harmony. Towards the spring she becomes more clamorous and impatient of confinement, but at all times will approach those persons who are in the habit of feeding her, and will take food from the hand, at the same time uttering those plaintive harmonious notes for which the species has been remarkable, and which are always attended with a singular jerk of the head. She usually carries her neck straight and erect, either upon the water or when stationary upon land; but in walking the head is lowered, and the neck reclining on the back. In the season of love she flaps along the surface of the water, and would undoubtedly fly if the precaution of annually cutting the feathers of one wing were omitted. Her nature is gentle, timid, and sociable, and she will follow those with whom she is acquainted from one side of the menagerie to the other, especially the ladies of the family dressed in white; is often turned out of her course by a pugnacious male Shieldrake, and acts only offensively when food is the object, and then only when resentment is not expected. She eats but little grass on land, but will devour aquatic plants occasionally. Barley, however, is her principal food, and she never attempts to touch bread, which is sometimes thrown to other birds; nor will she devour small fish, which some of the Diving Ducks greedily eat."

The nesting-place of the Whistling Swan is in the wide swamps of Finland and North Russia; considerable numbers likewise breed in Iceland and North America. In Iceland, Faber tells us, they

may be seen in February upon ponds of fresh water, and there they remain until the end of April, when most of them resort to more elevated situations ; some of them, however, remain in the valleys. A small pond or lake is always selected as a breeding-place, and if a pair should not be able to appropriate a whole pond, they take possession of part as their own peculiar property, and resolutely drive away all intruders. The nest, which is sometimes raised upon an island, but often floats upon the water, is generally a huge structure, built of reeds, rushes, sedge, and water-plants, and its cavity carefully lined with down. About the end of April or the beginning of May (probably much earlier in more southern latitudes) the female lays from five to seven yellowish white, greenish, or brownish yellow eggs, from which the young come forth during the first days of July. The faithful husband during the whole period of incubation keeps his partner company, lying upon the nest, but taking no part in the brooding. Towards the middle of October the whole family may be seen swimming about together, the young ones being by that time nearly fully fledged. Throughout the north these Swans are eagerly sought for, and many are mercilessly destroyed during the moulting season. When moulting their wing-quills they are attacked in their breeding-ponds by means of small boats, and numbers of them killed with sticks. Both old and young are at this season very fat, and are in much request for the table.

BEWICK'S SWAN.

BEWICK'S SWAN (*Cygnus Bewickii*) is considerably smaller than the species above described. In this bird the neck is very slender, the bill much raised at its base, and the tail composed of eighteen feathers ; in other respects it resembles the *Cygnus musicus*. The plumage is at first grey, afterwards white, tinged with rust-red on the crown of the head and under surface of the body, and ultimately becomes of a pale white. Bewick's Swan is an annual visitor to Great Britain, and is most numerous seen during severe and long-continued snowstorms, when it resorts to the open sea-coast of estuaries. Mr. Blackwall, describing a flock of these birds seen in Lancashire, says, " They were observed flying at an elevation not exceeding fifty yards above the surface of the earth. They flew in a line, taking a northerly direction, and their loud calls, for they were very clamorous when on the wing, might be heard to a considerable distance. One individual of this flock having been wounded, was placed on a reservoir, near the place where it fell. When on the water it had somewhat the appearance of a Goose, being almost wholly devoid of that grace and majesty by which the Mute Swan is so distinguished. It appeared to be a shy and timid bird, and could only be approached by stratagem, when it intimated its apprehension by uttering its call. This bird carefully avoided the company of a Mute Swan that occupied the same piece of water." According to Yarrell, some other specimens taken near Belfast were very gentle and timid, and never attempted to molest the Wild Fowl contained in the same pond, though all were their inferiors both in size and strength.

This Swan appears by preference to spend the greater portion of its time on land. Its voice, which is chiefly heard during the migratory season, is a low deep whistle, once repeated. Temminck states that this species breeds in Iceland in May, and has been seen in Picardy during the winter.

THE BLACK-NECKED SWAN.

The BLACK-NECKED SWAN (*Cygnus nigricollis*) is a beautiful bird, inhabiting South America, and recognisable from its northern brethren by the shortness of its wings, which do not extend beyond the base of the tail, which is composed of eighteen feathers, and by the black in its plumage. In this bird the entire body is white with black head and neck, the former enlivened by a white line upon the brow. The eye is brown, and the beak lead-grey ; the cere and bare cheek-stripes are blood-red, and the feet pale red. This species is forty-eight inches long, the wing measures fourteen, and the tail from six to seven inches. The habitat of the Black-necked Swan is limited to the most southern portion of

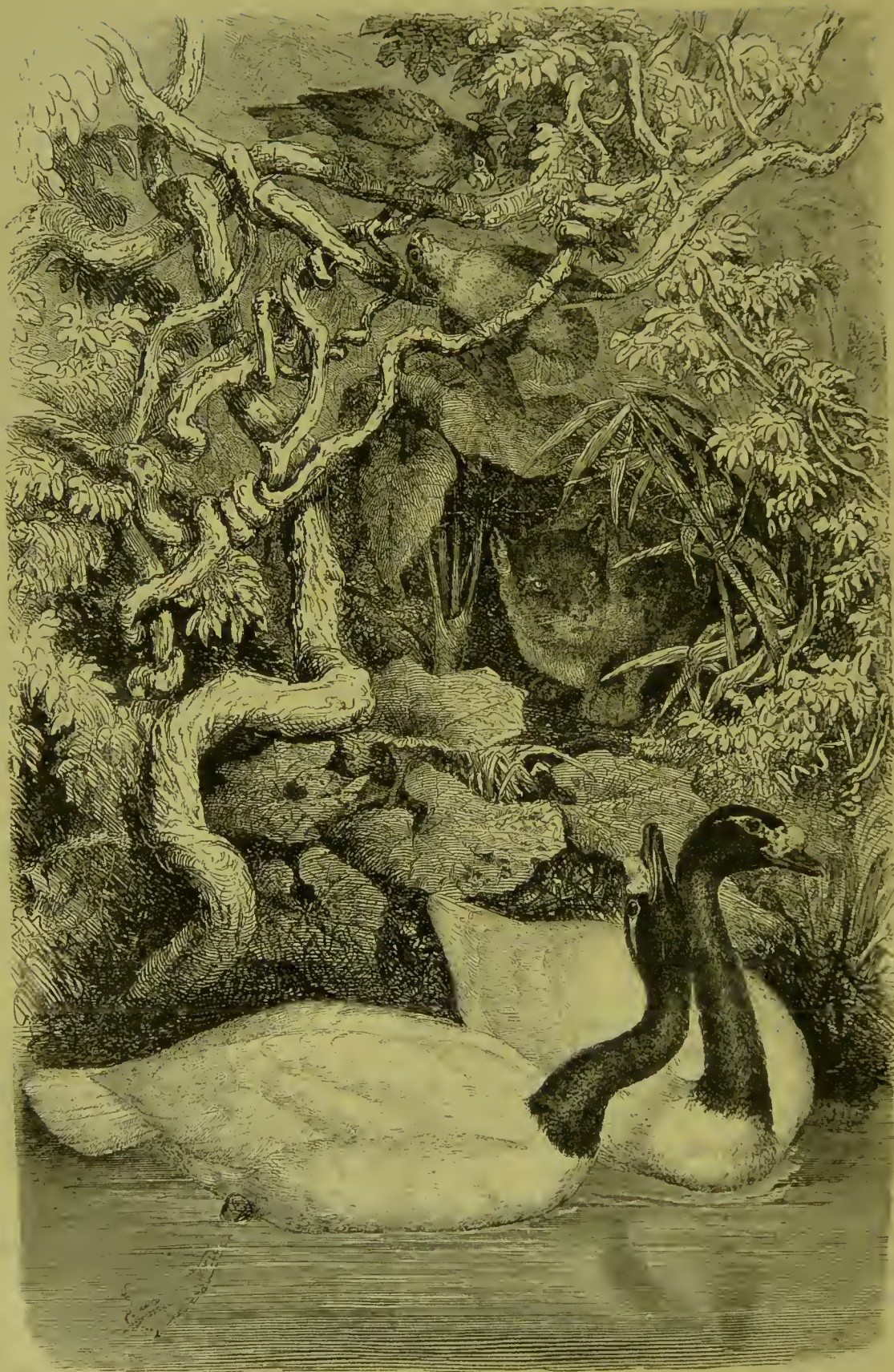
America, extending from South Peru to the Falkland Islands, and from that point along the east coast as far as Santos in Brazil. The residence of these birds varies with the season of the year; during the spring and autumn they are met with in small parties about Buenos Ayres on their way to their more northern haunts, where they remain throughout the winter, when they return south to breed. During the period of incubation they occupy the lagoons and lakes of the interior, and after that season unite with their own and allied species into large flocks. The flight of this Swan is light and beautiful, but in other respects it is without the grace that characterises most members of this family. While swimming the neck is held erect, after the manner of a Goose. We are without particulars concerning the incubation of these birds, beyond that when first hatched the young are covered with white down, and that they grow with such rapidity that by the autumn they are scarcely distinguishable from their parents. The late Earl of Derby was presented with the first Black-necked Swan ever brought to Europe; to this were afterwards added seven more. After the death of the Earl two were presented to her Majesty, and the rest consigned to the Zoological Gardens, in the Regent's Park, where they lived for many years without breeding. In 1856, however, a pair commenced a nest, but did not lay until the following year, since which time they have incubated annually.

THE BLACK SWAN.

The BLACK SWAN (*Cygnus-Chenopsis-atratus*) has a slender body, very long neck, and small well-formed head; the beak nearly equals the head in length, and is without a cere. In this species almost the entire plumage is of a brownish black, lightest on the under side, and shading into blackish grey at the edges of the feathers. This sombre garb is relieved by the brilliant white of the primary and of a considerable portion of the secondary quills. The eyes are scarlet, the bridles red, and the feet black: the beak is carmine-red, tipped with white, a stripe near the extremity of the upper mandible is also white. This bird is not quite so large as the *Cygnus olor*. The Black Swan is not merely strictly confined to Australia, but inhabits only its southern and western districts, occupying the rivers, estuaries, lagoons, and large pieces of water frequently in large flocks. On arms of the sea, which expand into sheets of shallow water, these birds are especially numerous, as in such localities they are beyond the reach of severe winds or pursuit from the natives. "In the white man, however," says Mr. Gould, "the Black Swan finds an enemy so deadly, that it has been almost, if not entirely, extirpated. One most destructive mode in which this is effected, is that of chasing the birds with a boat at the time they shed their primary quill-feathers, when, being unable to fly, they are soon rowed down and captured."

The breeding season is from the beginning of October to the middle of January. Mr. Gould procured newly-hatched young, clad in greyish white, at Southport River, on the 31st of December, and took five newly-laid eggs on Flinders' Island on Bass' Straits, on the 13th January. The nest is large, composed of flags and other herbage, and generally placed on an isolated island. The eggs are from five to eight, pale green stained all over with buffy brown, and are four and a half inches long by two and three-quarters broad. The Black Swan is graceful in demeanour, and gentle and harmless unless molested.

These birds are to be found in most aviaries in Europe, but as an instance of their most successful rearing, Mr. Gould gives us the following account of some of them kept on the Wandle, at Carshalton, Surrey, by Mr. S. Gurney:—"They were purchased from Baker, Leadenhall Market, in 1851, but did not breed till 1854, when they laid their first egg on January 1. It was a most severe winter, snow on the ground, and intense frost nearly the whole time they were sitting. They hatched their young during the greatest cold of that winter, from which they did not suffer, though they had no shelter of any kind, and their nest was fully exposed to the east wind. Out of the ninety-three

BLACK-NECKED SWANS (*Cygnus nigricollis*).

young ones hatched by them up to the present year, 1862 (inclusive), about half that number have been reared. Some of them have died from disease, but most of them have been killed by the old ones dragging them about in the fields, when they have fallen into small holes on their backs, and have not been able to recover themselves. They have bred sixteen times in seven years, having laid 111 eggs."

The GEESE (*Anseres*) constitute a very numerous family, whose members are met with in all



THE BLACK SWAN (*Cygnus* or *Chenopsis atratus*). ONE-SIXTH NATURAL SIZE.

parts of the world. In these birds the body is compact, the neck short, and the head large ; the legs are situated near the middle of the body. The beak, which nearly equals the head in length, and slopes gradually to its tip, is vaulted above and flat beneath, compressed at its sides, and terminated by a large broad nail ; its margins are more or less denticulated, and its surface covered with a soft skin. The moderate-sized foot has its three anterior toes united by a large web, and armed with stout, strong, flatly-curved claws. In the large, broad, pointed wing the second quill is longer than the rest, and the upper secondaries are less developed than in the Swan ; the wrist-joint exhibits a hard knob, which in some species assumes the form of a powerful spur. The short tail is composed

of from fourteen to twenty feathers, and is either broadly rounded or straight at its extremity. The plumage is very similarly coloured in both sexes, but varies considerably in different groups; the young when one year old resemble their parents. Every division of the world has its own appropriate species of Geese. In Europe, and in Asia, many different kinds are to be met with in almost equal abundance, and in high northern latitudes many are common to the eastern and western hemispheres. Towards the south, however, the habitat of the different races is more sharply defined. The Geese are less exclusively aquatic than any other *Lamellirostres*; indeed, some of them pass the greater part of their lives on dry land, and a few might almost be called arboreal in their habits, seeing that they not only resort to and roost upon trees, but build their nests among the branches. Most of them prefer plains to mountainous districts; nevertheless, certain species are to be met with at considerable altitudes, both in the Himalayas and the Andes. They walk extremely well, and though in swimming they are neither so graceful as the Swans nor as active as the Ducks, they row themselves along with ease and facility; on an emergency many of them will dive to a considerable depth, and the power and endurance of their flight is remarkable. When flying in companies, they always arrange themselves in a regular V-shaped phalanx, the form of which appears to be of importance; neither is it difficult to understand why they so persistently adopt the same arrangement, as it is evident that such a disposition is the only one that would enable every individual of the numerous party to have a free and unobstructed range of vision, and, moreover, it possibly facilitates their passage through the air, at all events it affords free scope for the use of their wings, which otherwise, from their crowding together, would be seriously interfered with. Very generally a flight of Wild Geese will be seen to press onward with unbroken ranks until they are quite lost in the distance; occasionally, however, they will, as it were, with one consent relax their speed, break up their phalanx, and for a short space become confusedly mixed together. Soon, however, a leader again places himself at their head; his followers resume their ranks, and the whole body moves forward in precisely the same order as before. Their flight is accompanied by a loud rushing noise, caused by the powerful strokes of their wings, and the rising or setting down of a flock presents a very bustling scene. When walking on level ground, the Geese keep the fore part of the body slightly elevated, with their neck straight or somewhat bent. Their steps are short and quick, and upon occasions many species can run with considerable speed. While swimming, the breast is deeply immersed, while the tail, on the contrary, is raised above the surface of the water. Their voice varies with the species; most of them express their anger by loud and prolonged hissing, some cackle, while others, like the Singing Swans, produce loud resonant notes that can be heard at a great distance.

These birds differ very much, both as to the localities they select for their nesting-places, and the season at which they breed. Many species, as spring approaches, begin to assemble in remote morasses and unfrequented swamps, and here upon small islands or hillocks they make a rude kind of nest, composed of water-plants, and lined with down. Some, on the contrary, select the forked branches and hollow trunks of trees, or occasionally convert to their own use the eyries of other birds. Their brood consists of from six to twelve well-shaped, thick-shelled eggs, always of a dull and uniform tint. The usual duration of incubation is about a month. The newly-hatched Goslings are covered with a soft warm coat of greyish down, and soon begin, under the guidance of their parents, to provide for themselves. They run and swim actively on the very day of their birth, and their growth is so rapid, that in the course of a couple of months they are completely fledged. They, however, remain together as a family for a very long period. All Geese live principally upon vegetable diet; by means of the hard margins of their beak they are able to crop grass, and also to collect grain, and a variety of vegetables. They likewise procure various small animals and aquatic plants from the bottom of the water.

THE SPUR-WINGED GOOSE.

The SPUR-WINGED GOOSE (*Plectropterus Gambensis*) is characterised by its large size, slender body, long neck, strong beak, furnished with an excrescence at its base, its unfeathered face, and long bare legs. The feet are provided with long toes, connected by large webs ; in the long, pointed wings the upper secondaries are much developed, and the wrist-joint armed with a powerful spur ; the tail is of moderate length and wedge-shaped, and the plumage, composed of large feathers, is smooth and compact. In this bird the cheeks, chin, throat, centre of breast, under side, and the short feathers on the upper wing-covers are all white ; the rest of the plumage is blackish green. The eyes are reddish brown, the beak and the excrescence at its base blueish red ; the feet dull light red. This species is three feet long and five feet and a half broad ; the tail measures seven inches. The female is considerably smaller than her mate, but resembles him in the coloration of her feathers ; the young are brown on the upper parts of the body, with black wings, a greyish brown neck, and white throat ; the rest of their plumage is light grey. The habitat of the Spur-winged Goose extends over the whole of Central and South Africa, where it occupies the borders of streams or rain tanks, in small parties, and seldom wanders to any distance from its usual haunts. During the months of March and July it retires to secluded and marshy localities in order to moult, as at those periods it is unable to fly. At the commencement of the rainy season the flocks separate in pairs, and seek their breeding places. The large nest, which is formed of rushes, reeds, and grass, is occasionally placed in the water, and contains from three to six eggs. The downy young appear about September or October, and remain with their parents until they are full-grown. Within the first year they acquire the same plumage as the adults, but do not exhibit the excrescence on the bill till they are somewhat older. When in the water the movements of this species resemble those of its brethren, but upon the ground its gait is very similar to that of the Stork. When about to fly it runs for some distance, and then rises with powerful and rapid strokes of its wings to a considerable height ; occasionally whilst in the air it may be seen indulging in a very peculiar hovering motion. We have never heard the Spur-winged Goose do more than utter a hoarse hissing sound. According to our own observations it is timid and cautious in its intercourse with man, but appears to take little heed of any of its feathered companions. Yarrell mentions that two specimens of this bird have been shot in England, the one in Cornwall, the other in Yorkshire, and for many years several have been kept in the Zoological Gardens, Regent's Park.

THE GREY OR WILD GOOSE.

The GREY OR WILD GOOSE (*Anser cinereus*), the species from which our Domestic Goose is descended, has the feathers on the upper portions of the body of a brownish grey, edged with a whitish shade ; whilst those on the under side are yellowish grey bordered with deep grey. The wing is dark grey, and the region of the rump pure white ; the quills and tail-feathers are blackish grey with white shafts, the latter are also tipped with white ; the eye is light brown, the beak yellow, and the foot pale red. This species is fully three feet long, and five feet and a half broad ; the wing measures eighteen, and the tail six inches. The Grey Wild Goose was formerly very common in the fenny districts of England, but is now comparatively rare both in this country and in Ireland. It is a winter visitor to Orkney and Shetland, but does not remain to breed, passing northwards in the spring.

THE CANADA GOOSE.

The CANADA GOOSE (*Cygnopsis Canadensis*) nearly resembles the Domestic Goose in many particulars, but is recognisable therefrom by its comparatively slender body, long neck, and variegated

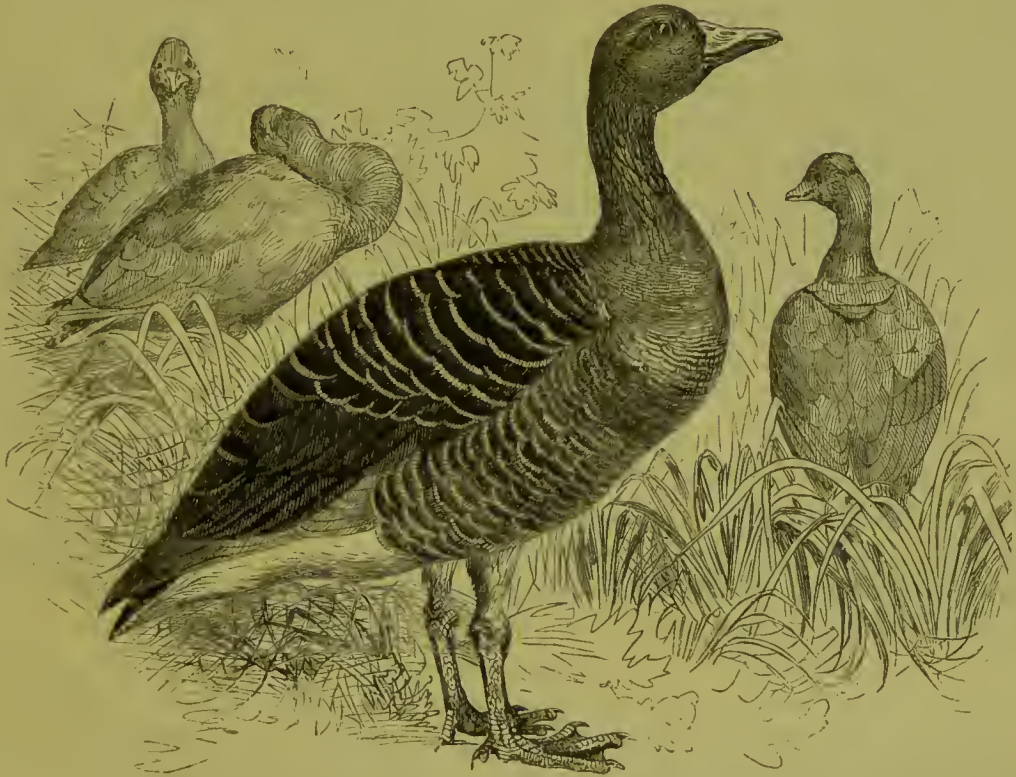
plumage. In this bird the head and nape are black, and the cheeks, throat, and gullet white or greyish white; the feathers on the upper part of the body are brownish grey with light edges; those on the breast and upper neck dark grey, and those on the rest of the under side pure white; the primary quills are blackish brown; the secondaries and tail (the latter composed of sixteen or eighteen feathers) are black. The eye is greyish brown, the beak black, and the foot blackish grey. The length of the male is from thirty-five to thirty-six inches, and his breadth from sixty-three to sixty-five inches; the wing measures eighteen inches, and the tail seven and a half. The female is not quite so large. The Canada Goose has frequently been shot in this country, and it is therefore included by



THE SPUR-WINGED GOOSE (*Plectropterus Gambensis*). ONE-FIFTH NATURAL SIZE.

Yarrell amongst British birds. Large flocks have been seen in Cambridgeshire, and specimens have been killed in Hampshire, Cornwall, and the Scilly Isles. A writer in the *Magazine of Natural History* also gives an account of a small flock of these birds that frequented and made their nest near Derby. This species, the Common Wild Goose of America, is well known throughout the United States, both as a resident and migratory bird. It advances north about April and May, when the disappearance of the snow and ice allows it to find berries and other vegetable matter; and after feeding for about three weeks, separates from the flock, and with its mate seeks such retired spots for breeding as afford a supply of suitable food. The nest is usually made upon the ground, but occasionally in trees, or in the deserted eyrie of a Raven or Fishing Hawk. During the breeding season the Gander displays his courage to the greatest advantage. Audubon gives the following

account of his personal experience in this particular. "I knew a male," says that writer, "that appeared larger than usual, and of which all the lower parts were of a rich cream-colour. It returned three years in succession to a large pond a few miles from the mouth of the Green River, in Kentucky, and whenever I visited the nest it seemed to look upon me with utter contempt. It would stand in a stately attitude until I reached within a few yards of the nest, when suddenly lowering its head and shaking it, as if it were dislocated from the neck, it would open its wings and launch into the air, flying directly at me. So daring was this fine fellow that in two instances he struck me a blow with one of his wings on the right arm, which for an instant I thought was broken. I observed that immediately after such an effort to defend his nest and mate, he would run swiftly towards them, pass his head and neck several times over and around the female, and again assume



THE GREY OR WILD GOOSE (*Anser cinereus*). ONE-SIXTH NATURAL SIZE.

his attitude of defiance. Should danger be imminent, the brave Gander urges his mate to fly off, and resolutely remains near the nest until he is assured of her safety, when he betakes himself to flight, mocking, as it were, by his notes his disappointed enemy. Suppose all to be peace and quiet around the fond pair, and the female to be sitting in security upon her eggs. The nest is placed near the bank of a noble stream or lake, the clear sky is spread over the scene, the bright beams glitter on the waters, and a thousand odorous flowers give beauty to the swamp which was of late so dismal. The Gander passes to and fro over the liquid element, moving as if lord of the waters; now he inclines his head with a graceful curve, now sips to quench his thirst, and as noontide has arrived he paddles his way towards the shore to relieve for awhile his patient consort. Carefully tended and taught, the young grow apace, and by the beginning of September are able to fly from one shore to another; then, as the increasing frosts give warning of approaching winter, the separate families unite, and on perceiving the coming of a snow-storm, at the general warning cry of the Ganders, the united flock rises high into the air, and the young are instructed how to move.

"But now the host has been marshalled, and off it starts, showing as it proceeds at one time an extended front, at another a single lengthened file, and now arraying itself in an angular form. The old males advance in front, the females follow; the young come in succession according to their strength, the weakest forming the rear. Should one feel fatigued, his position is changed in the ranks, and he assumes a place in the wake of another, who cleaves the air before him. Two, three, or more days elapse before they find a secure resting-place. The fat with which they were loaded at their departure has rapidly wasted; they are fatigued, and experience the keen gnawings of hunger; but now they spy a wide estuary, towards which they direct their course. Alighting on the water, they swim to the beach, stand and gaze around them; the young full of joy, the old full of fear, for they are well aware that many foes have been waiting their arrival. All night the flock remains silent, but not inactive; they betake themselves with care to the grassy shores, where they allay the cravings of appetite, and recruit their wasted strength. Soon as the early dawn lightens the surface of the deep, they rise into the air and proceed southward, until arriving in some place where they think they may be enabled to rest in security, they remain during the winter. At length, after many annoyances, they joyfully perceive the return of spring, and prepare to fly away from their greatest enemy, man."

The Canada Goose arrives in the western districts of that country about the beginning of September, and frequents the lakes, rivers, and wet savannahs of the interior as well as the sea-shore. These birds usually feed by plunging their head and the fore parts of their body beneath the surface, but never by diving. In the fields they pluck the grass sideways, like the Domestic Goose, and pat the earth with their feet to drive the earthworms from their retreats. They frequently alight in corn-fields to feed on the tender blades, and everywhere are extremely vigilant. While the flock reposes, sentinels are placed on the watch to rouse their sleeping companions if danger should approach. If pursued into the water, the Ganders utter loud cries, and in a few moments they rise simultaneously, and fly off in a compact body.

"So acute," says Audubon, "is their sense of hearing, that they are able to distinguish the different sounds or footsteps of their foes with astonishing accuracy. Thus the breaking of a stick by a deer is distinguished from the same accident occasioned by a man. If a dozen large turtles drop into the water, making a great noise in their fall, or if the same effect has been produced by an alligator, the Wild Goose pays no regard to it, but however faint and distant may be the sound of an Indian's paddle that may by accident have struck the side of his canoe, it is at once marked, every individual raises its head and looks intently towards the place from which the noise has proceeded, and in silence all watch the movements of their enemy. I was much surprised one day, while on the coast of Labrador, to see how cunningly one of these birds, which in consequence of the moult was quite unable to fly, managed for awhile to elude our pursuit. It was first perceived at some distance from the shore, when the boat was rowed towards it, and it swam before us with great speed, making directly towards the land; but when we came within a few yards of it, it dived, and nothing could be seen of it for a long time. Every one of the party stood on tip-toe, to mark the spot where it should rise, but all in vain, when the man at the rudder accidentally looked down over the stern, and then saw the Goose, its body immersed, the point of its bill alone above water, and its feet busily engaged in propelling it so as to keep pace with the movements of the boat. The sailor attempted to catch it while within a foot or two of him, but with the swiftness of thought it shifted from side to side, fore and aft, until, delighted at having witnessed so much sagacity in a Goose, I begged the party to suffer the poor bird to escape." The residents in Hudson's Bay eagerly welcome the arrival of these birds, on which they depend for their winter supply of provisions. Huts are built over the marshes where they feed, and decoys set up to lure them to destruction. In some years as many as three thousand or four thousand have been killed in Hudson's Bay, and salted for winter use. The eggs are also

much esteemed, and the feathers form an important article of commerce. The call of the Canada Goose resembles the syllables, "Hawk, hawk, hawk, awhawk, awhawk."

THE SNOW GOOSE.

The SNOW GOOSE (*Anser [Chen] hyperboreus*) has the entire plumage of a pure white, with the exception of the first ten quills, which are black, with white roots, and white shafts tipped with black. In young birds the feathers on the upper back, shoulders, a portion of the neck, the breast, and sides are blackish grey; the head and nape are shaded with grey; the lower back and feathers on the upper tail-coverts are dark grey; the primary and secondary quills greyish black, the latter bordered with greyish white; the tail-feathers are also dark grey, and similarly edged. The eye is dark brown, the beak dull pale red, edged with black, and the foot pale bright red. This species is from twenty-six to twenty-seven inches long, and from fifty-two to fifty-three broad; the wing measures sixteen and the tail six inches.

"The young of this species," says Audubon, "begin to acquire their whiteness about the head and neck after the first year, but the upper parts remain of a dark blueish colour until the bird suddenly becomes white all over, at least this is the case with such as are kept in captivity. My friend Dr. Bachman, of Charleston, South Carolina, kept a male Snow Goose several years along with his tame Geese. He had received it from a friend while it was in its grey plumage, and the following spring it became white. It had been procured in the autumn, and proved to be a male. In a few days it became very gentle, and for several years it mated with a Common Goose, but the eggs produced by the latter never hatched. The Snow Goose was in the habit of daily frequenting a mill-pond in the vicinity, and returning regularly at night along with the rest; but in the beginning of each spring it occasioned much trouble. It then continually raised its head and wings, and attempted to fly off; but finding this impossible, it was anxious to perform its journey on foot, and it was several times overtaken and brought back, after it had proceeded more than a mile, having crossed fences and plantations in a direct course northward. This propensity cost it its life; it had proceeded as far as the banks of the Cooper River, when it was shot by a person who supposed it to be a wild bird." A Snow Goose kept by Audubon himself exhibited the same desire to go northward on the return of spring.

When migrating northward, although they start at the same time, the young and old keep in separate flocks, the young continuing to remain apart from the old even when approaching the higher latitudes. During the whole winter, indeed, they remain divided, although in the same localities; and Audubon informs us that, although the young and old are often seen to repose on the same sand-bar, the flocks keep at as great a distance as possible from each other.

The SEA GEESE (*Bernicla*) are comparatively small, compactly-built birds, with short necks and moderately large heads; the short delicate beak is strong, broad and high at its base, slender towards its tip, and slightly denticulated at its margins; the foot is low, but powerful; and the wing so long as to extend as far as the tip of the short tail, which is rounded at its extremity. The thick plumage is principally of a deep grey, marked with black, white, and reddish brown. These Geese are met with in the extreme north of Europe, Asia, and America; the American, formerly considered as distinct from the European, being evidently only a variety. The home of these birds is to be found upon the coasts and islands situated between 60° and 80° of north latitude. Only a few breed in Iceland; but in Spitzbergen they are very numerous, and further east they abound throughout the summer along all the shores of the Icy Ocean; they are likewise numerous in Hudson's Bay and the neighbouring waters. From the above inhospitable regions they make annual pilgrimages to warmer

climates, appearing in Great Britain towards the end of October or the beginning of November. At this time they crowd the vicinity of the coast in thousands and tens of thousands; far as the eye can reach they may sometimes be seen wading around the banks of sand and amid the shallows left by the receding tide; their cries are to be heard above the roar of the surf; and the masses, when they take flight and rise into the air, resemble at a distance a thick and wide-spread smoke, their numbers being absolutely incalculable. A few individuals may also be sometimes seen in the interior of the country upon lakes and other large sheets of water; these, however, can only be regarded as stragglers: all Sea Geese well deserve the name, as under ordinary circumstances they never leave the coast. As relates to their ordinary food, these birds differ from Common Geese in so far that, besides grass and marine plants, they eat a considerable proportion of animal food. In northern regions they feed upon whatever is there to be met with. With us they prefer meadow grass and tender herbage. In captivity they readily feed upon grain, to which, however, should be added a considerable proportion of green vegetables.

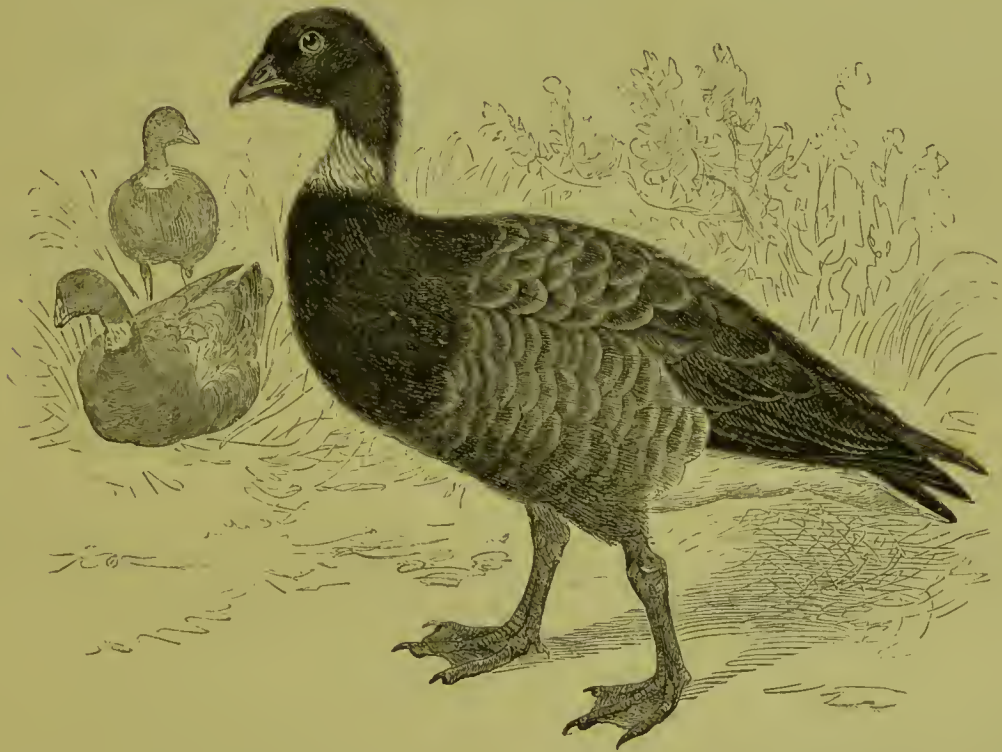
THE BRENT GOOSE.

The BRENT GOOSE (*Bernicla torquata*) is black upon the head, neck, quills, and tail; the feathers on the breast, back, and upper belly are dark grey, with light tips; the sides of the belly, rump, and upper tail-coverts are white; the sides of the throat are decorated with a white crescent-shaped patch. The young are without the white feathers on the throat, and are darker than the adult birds.

The Brent Geese are constant summer visitors to the British shores, arriving in October and departing about the end of April. These birds are distinguishable beyond all others of the family by the elegance of their movements and their peaceful demeanour; they walk well both upon firm ground and over a muddy surface; they swim rapidly and buoyantly, and dive with facility; their power of flight surpasses that of any other Geese; they do not, however, when flying adopt the wedge-like arrangement so commonly seen among their congeners, but make their way through the air in large noisy flocks, in which the birds are promiscuously crowded together. The noise made by one of these vast assemblages, as they rise from the ground, resembles the roll of distant thunder, and even when flying at a considerable elevation the movement of their wings produces a whizzing sound which is distinctly audible. Their voice is very harsh; the call-note somewhat resembles the syllables "Kn-āng," often repeated; when feeding they utter a rough hoarse "Krōch," while their expression of anger is a low hiss. Like others of their race they always live associated in flocks, and should an unfortunate straggler become accidentally separated from his companions, he may be seen flying anxiously about in search of others of his species, never resting until once more safe in their society. The behaviour of these birds in the presence of man proclaims them at once to be unsophisticated children of the north, who have never experienced the tender mercies of their arch-enemy. They seem at first to witness his approach without any suspicion of danger, and it is only after suffering severely for their temerity that they become wild and distrustful. On their first arrival, indeed, whole families of them may sometimes be killed with stones and clubs, and they are taken in snares more easily than most other Geese.

"In calm weather," says Colonel Hawker, "these Geese have in general the cunning to leave the mud as soon as the tide flows high enough to bear an enemy, and then they go off to sea and feed on the drifting weeds. To kill Brent Geese by day, go out in a small punt at low water, and keep as near as possible to the edge of the sea. You will then hear them like a pack of hounds in full cry, and they will repeatedly pass within fair shot, provided you are well concealed, and the weather is windy to make them fly low. Before you fire at them, spring suddenly up, and these awkward birds will be in such a fright as to hover together and present a mark like a barn door. The Brent Geese

when fat are excellent eating." In confinement they are at first exceedingly timid, but soon become reconciled to their new condition, and even show marked attachment to those who feed them, coming at their call, and, if kindly treated, following their footsteps like dogs. In a farmyard, or upon a large pond, they are extremely ornamental, and deserve much more attention than they have as yet received. The Brent Geese have been long known to breed in considerable numbers on the shores of Spitzbergen, but it is only recently that we have had any definite accounts of their proceedings. Malmgren tells us that their breeding-places are chiefly to be met with in the western and northern coasts of the island, and on the rocks in the vicinity, more especially in places resorted to by Eider Ducks. Their nests are very rudely constructed with the stems and leaves of water-plants, and are often placed so close to those of the Eider Duck that those birds frequently steal their eggs



THE BRENT GOOSE (*Bernicla torquata*). ONE-FIFTH NATURAL SIZE.

in great numbers. The brood of the Brent Goose consists of from six to eight comparatively small, thin-shelled, lustreless eggs, of a dirty, greenish white colour. Middendorf found a young bird newly hatched about the middle of July. Further than this we have no information.

Upon the southern coasts of the Baltic and in Holland, during the spring and autumn, thousands of these birds are shot, and a still greater number captured by means of decoys. Their flesh is much esteemed, but has occasionally a disagreeable rancid taste, probably owing to the shell-fish upon which they feed. To remedy this, it is usual in Holland to keep them for some time before they are killed, feeding them with grain and other vegetable diet.

The FOXY GEESE (*Chenalopex*) are at once recognisable from the above species by their slender neck, large head, short beak, high foot, broad wing, and beautiful plumage. The somewhat feeble bill, which is raised at the base and depressed towards the tips, terminates in a broad, round nail; the partially bare foot is slender, and furnished with small toes; the wings exhibit a slight spur

at the wrist-joint, and have the upper secondary quills well developed ; the short tail is composed of fourteen feathers. The members of this group are natives of Africa and Syria.

THE NILE GOOSE.

The NILE GOOSE (*Chenalopex Ægyptiacus*) has unusually variegated plumage. In this species the sides of head and front of the neck are yellowish white, finely dotted ; the patch around the eye, the nape, and a broad band about the throat, are reddish brown ; the feathers on the upper portions of the body are grey and black, and those of the under side reddish yellow, marked with black and white ; the centre of the breast and belly are of lighter shade, and the former is decorated with a large, round, reddish brown patch ; the white wing-covers are striped with black and enlivened by a fine metallic lustre ; the tips of the quills and the tail-feathers are glossy black ; the eye is orange or yellow ; the beak blueish red with blueish grey base, and light tip to the upper mandible ; the foot is reddish, or light yellow. This bird is two feet three inches long and four feet and a half broad ; the wing measures sixteen inches and the tail five inches and a quarter. The female is smaller than her mate, but nearly resembles him in her general appearance ; her plumage, however, is not so finely marked, and the patch upon her breast of inferior size.

The head-quarters of the Nile Goose extend from Egypt to the Cape of Good Hope, and from the east coast far into the interior of Africa ; along the west coast of that continent it probably does not occur. From Africa its range extends throughout Palestine and Syria, reaching as far as Greece, Italy, and the south of Spain. During our travels in Africa we had abundant opportunities of observing these beautiful birds, whose portrait is not unfrequently to be seen sculptured upon the monuments of ancient Egypt. In Lower Egypt they are abundant all along the Nile, except in such places as are particularly unsuited to their habits ; as, for example, where the river washes walls of bare rock, or where no islands are to be met with. In Southern Nubia they are to be seen in large flocks ; in Soudan they are regular occupants of the banks of the rivers, and are even met with upon pools of rain-water, as well as large ponds, at a considerable distance from their banks. During the breeding season these birds generally occur in pairs, afterwards in company with their young families ; but at a later period they associate together in large flocks, and in the moulting season, during which they are not incapable of flight, innumerable hosts of them may be seen crowding the shores of the river for hours together. On one occasion during our journeyings along the White Nile, for three successive days we found the banks crowded with countless birds, of which the Nile Geese formed a very conspicuous portion ; they are, however, never to be seen at any great distance from water, except, indeed, when winging their way high in the air. They seem, moreover, to prefer certain parts of the river, from whence they fly into the neighbouring fields in search of food, returning to them again when their hunger is satisfied. Each pair takes possession of a certain space of ground, from which they jealously expel all intruders ; nevertheless, the males readily associate with each other, and may often be seen together apparently enjoying a quiet chat, or occasionally a bit of fighting. The personal endowments of the Nile Geese are quite on a par with the elegance of their plumage. In running they emulate the long-legged Spurred Geese ; they swim gracefully and without effort, keeping the fore part of their bodies deeply immersed ; they are able, moreover, to dive to a considerable depth, rowing themselves along when under water both with their feet and wings. Their flight is noisy, but light and rapid. When flying in pairs, one follows close behind the other ; when in large flocks, they frequently observe no regular order, except they are bound upon a long journey, on which occasions they adopt the V-like phalanx. Their voice has some distant resemblance to that of our Domestic Goose ; it is, however, hoarse, and reminds the listener of the notes of a cracked trumpet. In all its proceedings this Goose seems to be particularly cautious and circumspect ; always watchful

for its own safety, it mistrusts the slightest approach of a stranger, and in this respect is more afraid of a foreigner than of the negroes, with whose appearance it is most familiar. Its temper and disposition are by no means in accordance with the beauty of its appearance; indeed, it must be classed with the most domineering and vicious of its race, for although living in society it can hardly be said ever to be at peace with its companions. During the pairing season the battles between the males are literally to the death (at least so we have found it in some that we kept in confinement); they follow one another with loud cries and unappeasable fury, bite savagely, and beat each other with their wings until one or both fall exhausted to the ground. The Ganders seem to delight in tyrannising over all the other inmates of the pond, and not content with persecuting Ducks and Geese considerably larger than themselves, such is their boldness and audacity that they will sometimes attack even man himself. Should one of them encounter another male of his own species, either alone or accompanied by a female, it will fall upon him as though it were a bird of prey, and should it be unable to kill him by blows inflicted with the beak and wings, will try to drown him. No sooner is the vanquished bird so exhausted as to be unable to resist, than, mounting upon its body, the victor seizes it by the neck and holds its head under water until life is quite extinct. With such dangerous propensities it is not to be wondered at that this species, notwithstanding the vivacity of its manners and the beauty of its appearance, is scarcely admissible among other birds.

The food of the Nile Goose is of a very promiscuous character; like our own Wild Geese it may be seen grazing in the fields upon all sorts of vegetables; after the manner of Ducks it obtains nutriment from the mud of shallow pools, and will even dive to the bottom of rivers in search of what is there procurable. At certain seasons the young birds are passionately fond of locusts, and neither old nor young have the slightest objection to animal food; they do not, however, appear to eat fishes. It may occasionally happen in places where no trees are to be met with that these birds construct their nests upon the ground, but wherever there are woods coming to the water's edge, or even single trees of suitable dimensions, their nests must be looked for among the branches. In Africa they generally select for this purpose the thorny mimosa, known among the Arabs as the *Harahsi*. Their nest is very generally constructed of branches derived from the tree itself, intermixed with smaller twigs, and warmly lined with grasses.

The number of eggs, according to our own experience, varies from four to six; our black hunters nevertheless asserted that they had taken ten or twelve from a single nest. The eggs are of very round shape, thick-shelled, smooth, and of a yellowish or greyish white colour. The breeding-time of these birds varies according to the season. In Egypt breeding commences about the beginning of September. From individuals kept in confinement we have ascertained that the period of incubation extends over twenty-seven or twenty-eight days, and that only the female sits upon the eggs. During this period the Gander keeps careful watch, sitting constantly close to his mate and giving timely warning of the approach of any intruder. Once a day, and that always in the afternoon, the breeding female leaves her nest, having previously covered her eggs warmly with down. The young are able to run about immediately after leaving the egg, and on the slightest alarm hurry at once into the water, where they immediately dive; their education very much resembles that of the goslings of the Grey Goose.

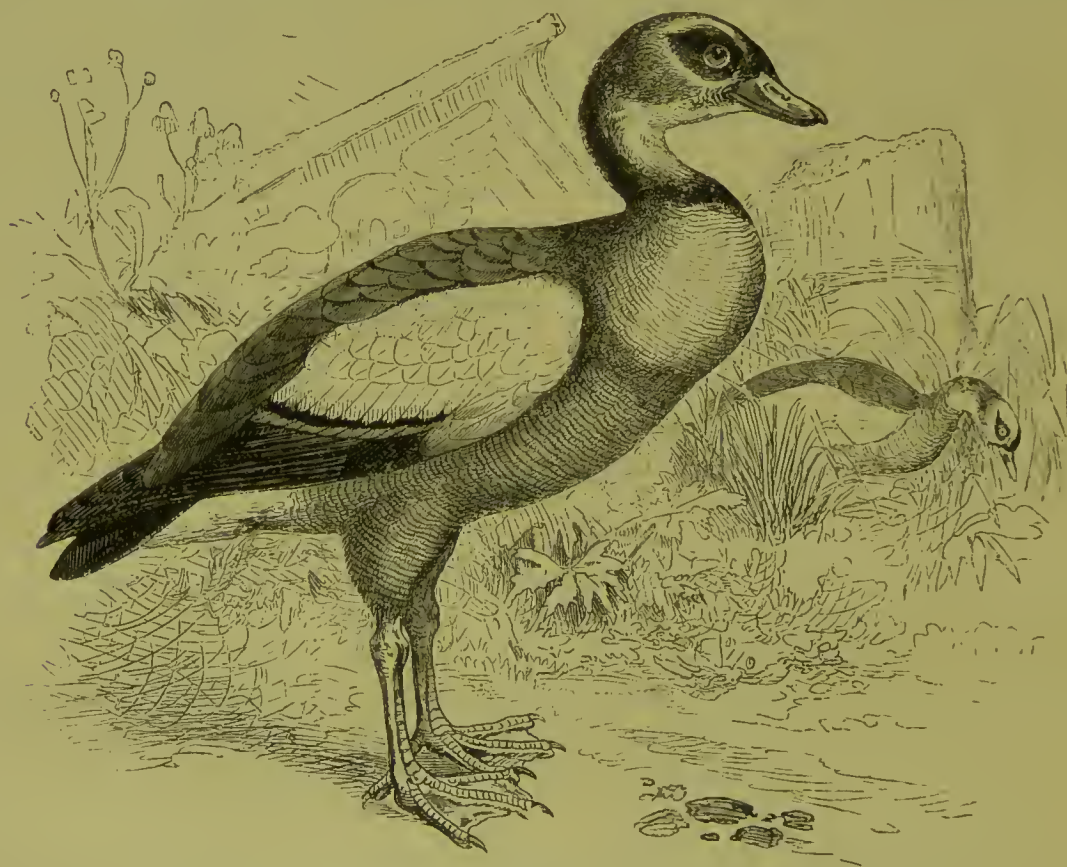
In Egypt the Nile Goose is much sought after both by Turks and Europeans. Its flesh differs little as an article of food from that of the Wild Geese; that of the young birds is excellent, but the old are hard and tough, nevertheless they make capital soup.

The DWARF GEESE (*Nettapus*) form a distinct group, whose members occupy South Asia, Africa, and Australia. These birds are characterised by their small beak, which is high at the base,

slopes gradually to the tip, and is furnished with very short, broad denticulations ; their wings are abruptly rounded, and their tail composed of twelve feathers.

THE WHITE-BODIED GOOSE TEAL.

The WHITE-BODIED GOOSE TEAL (*Nettapus Coromandelianus*) is black on the crown of the head, and of a magnificent green shaded with purple over the entire mantle ; the face, back of the head, neck, and under side are pure white ; the throat is partially encircled by a black band ; the feathers on the belly and the lower tail-covers are spotted with black and white, those of the upper covers are greyish brown with light spots, the tail-feathers blackish brown ; the extremities of the primary quills are



THE NILE GOOSE (*Chenalopex Ægyptiacus*). ONE-FOURTH NATURAL SIZE.

spotted with white, the lower secondaries exhibit similar but smaller spots, whilst the upper secondaries are marked with black ; the eye is red ; the beak black ; and the foot greenish brown ; during the period of incubation the latter is spotted with black. This small Goose is not more than thirteen or fourteen inches long, the wing measures six inches and a half, and the tail three and a quarter. In the plumage of the female the brown is less conspicuous, and the mantle comparatively lustreless ; her quills are also without any white spots ; the sides of the wings and tail-covers are pale brown ; the feathers on the nape are marked with dark lines, those of the under side with dirty white, and the thighs with pale grey. This most beautiful little Goose, according to Jerdon, "is met with in India, as also in Ceylon, and on the Malay Peninsula. In some parts of India it is very numerous, but is rare in the North-west Provinces. Its favourite resorts are ponds covered with reeds and rich in grass, and upon these it may sometimes be seen in numerous flocks." Its flight is rapid, and when



CEREOPSIS GEESE.

upon the wing it utters a loud peculiar cry. According to Blyth it walks badly, and after making a few steps regularly squats down; hence it is possible, or rather probable, that in a wild state it seldom comes upon dry land. So long as it has not suffered persecution it is extremely tame and trustful. It makes its nest in the cavity of some old hollow tree, or occasionally in ruins or old walls, sometimes at a distance from the water. The small eggs, which are eight, ten, or more in number, have a white shell. The young are at first clad in a coat of thick grey down, and almost immediately after their birth they are literally cast out of the nest by their parents, who at once conduct them to the nearest pond. We are told by one observer that only the female broods, while the Gander amuses himself in the society of others of his own sex. Jerdon, however, doubts this statement, or at least that such is always the case, basing his scruples upon the fact that in more than one instance he has seen both male and female fly together from the tree in which their nest was situated. The flesh of these Geese is not much esteemed; nevertheless it is said that at certain seasons it is tolerably good.

THE CEREOPSIS GOOSE.

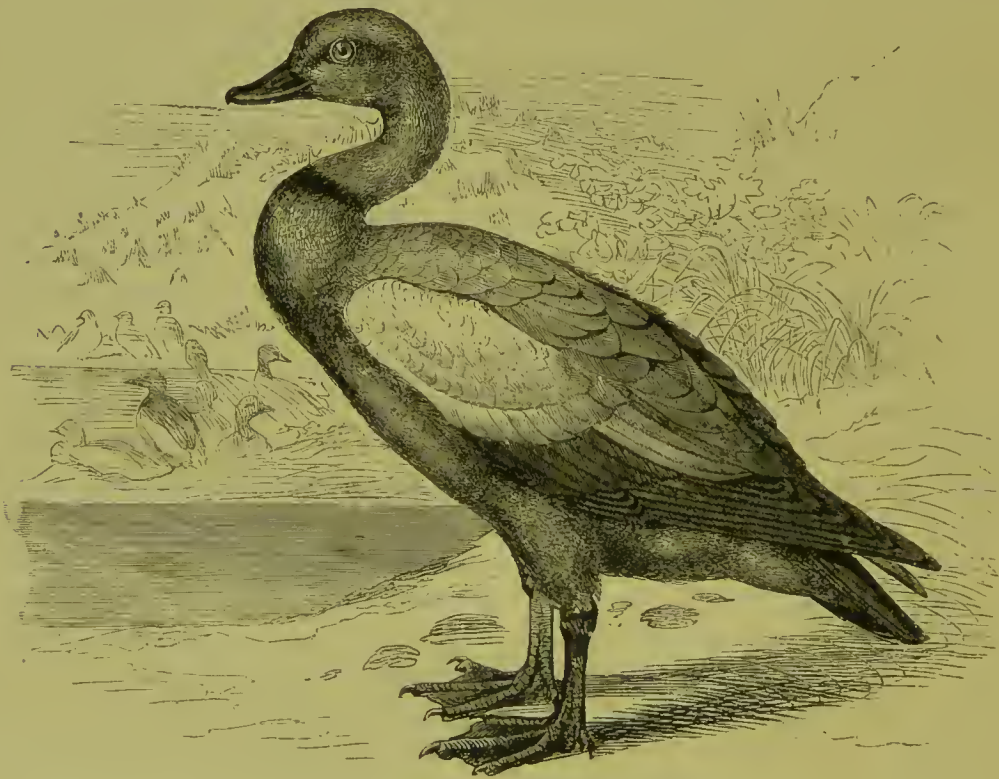
The CEREOPSIS GOOSE (*Cereopsis Novæ-Hollandiæ*) is recognisable by its powerful body, thick short neck, small head, and short strong beak, which is high at the base, and covered with a cere almost to the blunt and hooked extremity. The webbed feet have long tarsi, short toes, and large powerful claws. In the broad wings the shoulder-quills are well developed. The tail is short and rounded; the thick plumage is of a beautiful dark grey, shaded with brown. The crown of the head is somewhat lighter, and the back decorated with round, blackish brown spots, situated at the tips of some of the feathers. The lower halves of the secondary quills and tail-feathers are also brownish black. The eye is scarlet, the beak black, the cere greenish yellow, and the foot blackish. The female resembles her mate in the coloration of her plumage, but is recognisable by her inferior size. The Cereopsis Goose, the only member of the family to which it belongs, is one of those extraordinary birds that at once arrest the attention of the traveller. Not many years ago the localities where it was the most numerous appear to have been the islands in Bass's Straits.

Labillardière relates that the first specimens he obtained were captured by the sailors with their hands; and Flinders tells us that one of his boat's crew killed a great number with short sticks, and took several alive. Bailly not only confirmed these accounts, but states that those he saw could be easily run in upon and captured without trouble. All the above navigators speak of the flesh as being excellent, much better, indeed, than that of European Geese, and seem to have prosecuted the chase with considerable ardour. As a necessary consequence, later visitors found not only that the bird was no longer plentiful, but that from many of these islands it had been completely extirpated. Gould, who shot a pair on Isabella Island, nevertheless thinks that several of them may yet exist upon unvisited parts of the southern coast of Australia. "An old Bushman," however, remarks that on the Australian continent he only saw them twice—in one case there was a small flock, and in the other only two birds, which were in company with some other Geese. The Cereopsis, or "Hen" Goose, as it is called, lives, as might be expected from such an appellation, much more on dry land than on the water. It walks well, and swims badly; indeed, judging from individuals kept in our Zoological Gardens, it seldom enters the water of its own free will. Its flight, likewise, is performed with difficulty, and is remarkably heavy. Its voice is a dull buzzing sound, very unlike the cry of a Goose. We have but scanty information respecting the habits of these birds in their wild state; but from their behaviour in captivity it is easy to form an idea of their usual mode of life. In its aversion to water the Cereopsis differs from all other Geese. Except when driven into a pond, it spends its whole time on land, devoting the morning and evening to the procuration of food, but reposing during the heat of the day and throughout the night. It is seldom seen in company with other species; indeed, its

disposition is even more quarrelsome and imperious than that of the Nile Goose. A pair of these birds, when placed among other water-fowl, begin in a very short time to assume unlimited authority, and their behaviour becomes (especially during the breeding season) absolutely insupportable. Nevertheless, they soon learn to recognise their keepers, to whom they exhibit considerable attachment. In New Holland they would long ago have been numbered among the inhabitants of every farmyard had it not been for this unbearable conduct. Such as have been brought to Europe have again and again hatched and reared a numerous progeny, so that with us they might readily be acclimatised. One principal obstacle to their breeding in the north is the contrariety of the seasons. In Australia they breed in the spring, which, of course, corresponds with our autumn; so that in the northern hemisphere, the young brood, becoming at once exposed to the rigours of winter, not unfrequently perish. We have, however, already learnt that those birds that have lost their eggs breed again in February, hence in the succeeding months there is every reason to suppose the young may be reared without difficulty. During pairing time the affection of the sexes towards each other is unmistakable. The Gander walks around his mate with graceful salutations, keeps vigilant watch over her safety, and resolutely drives away all other intruders, great and small, that may happen to approach the domain which he has selected. The care of constructing the nest appears to devolve upon the female, who always selects the best materials within her reach; and, although the result of her labours is not an artistically-constructed cradle, it is considerably more so than the nests of the generality of Geese, its interior being smoothly rounded and comfortably lined with feathers. The eggs are comparatively small, somewhat round in shape, smooth-shelled, and of a yellowish white colour. From observations made in Paris we found the duration of incubation to extend over thirty days; in a colder climate it is somewhat longer. In the park of our friend, M. Cornèly, in Belgium, thirty-eight days elapsed before the young escaped from their shell. On the very day of their escape they ran after their mother, picking up food from among the grass. They refused to eat hard-boiled eggs, chopped earthworms, and other kinds of animal food, and would not even touch white bread, confining themselves exclusively, as it appeared, to green vegetables. No sooner are the young hatched than the pugnacity of the Gander displays itself in full force; he seems to fear nothing, and attacks a man with as much animosity as he exhibits towards every other animal that intrudes upon his privacy. "I considered my Gander bad enough before," writes M. Cornèly, "but now I think he must be mad. He attacks every living thing indiscriminately. One of my large Cranes happened to come in his way; he flew at him, and although the keeper was not a hundred yards off, and ran as fast as he could to part them, the poor Crane was killed before he could interfere. One night the Gander got into the stable where another of these birds was kept, and in the morning the body of the Crane was found almost hacked to pieces." However ornamental these Geese may be, it is evident that it is only where they have plenty of room to themselves and are not likely to interfere with other animals, that they are eligible subjects for domestication.

The DUCKS (*Anates*) constitute the most numerous and varied family of the entire order, and are at once distinguishable from the Geese by the flatness of their feet, and from the Swans by the shortness of their necks. In these birds the body is short and broad, the neck short or moderately long, and the head thick; the beak, which is about the same length as the head, is either of uniform breadth, or is highest towards the tip; the base of the bill is more or less high, and in some instances furnished with an excrescence; the upper mandible is arched, and projects so far over the sides of the lower one as partially to enclose it; the margins of both mandibles are sharply denticulated; the weak flat foot, which is placed very far back, has the centre toe as long as the tarsus; the hind toe is well developed, and in some species furnished with a membranous lobe;

the claws are weak ; in the moderate-sized, narrow, and pointed wing the second quill is the longest ; the short broad tail is composed of from fourteen to twenty feathers, and is either rounded or pointed at its extremity. The plumage, which is rich, smooth, and thickly interspersed with down, varies in colour according to the sex or age of the bird ; that of the male is more or less brilliant, and that of the female of comparatively sombre hue. The members of this family, regarded generally, are to be met with in every climate ; the number of species is, however, greater in warm than in cold latitudes, while on the contrary in northern regions individuals of the same species swarm in immense numbers. Ducks frequent both fresh and salt water, being sometimes met with on mountain lakes to a considerable elevation ; at the approach of winter they migrate to southern latitudes, often in incalculable hosts. In the extent of their migrations some species emulate the Swallow itself,



THE RUDDY SHELDRAKE, OR BRAHMINY DUCK (*Casarca rutila*). ONE-FOURTH NATURAL SIZE.

while others wander no further than is absolutely necessary in order to obtain food. These migrations are generally commenced at sunset ; towards midnight the birds alight upon some expanse of water, and after resting for a few hours recommence their journey in the early morning. Their flight is conducted either in one long string or in a wedge-like phalanx. The power of locomotion displayed by these birds is very various ; some species can walk upon dry ground almost as well as the Geese, while others waddle along with considerable difficulty. All are excellent swimmers, but they only dive exceptionally, and with considerable effort. Their flight is accomplished by rapid movements of their wings, and they are able to rise as easily from the surface of the water as from the ground. Ducks subsist upon both animal and vegetable food ; some, however, prefer the former, while others confine themselves to the latter diet. They are for the most part monogamous, and generally associate during the breeding season in great numbers ; a circumstance in which they differ remarkably from the Swans and Geese. Some build their nests in holes in the ground or in the

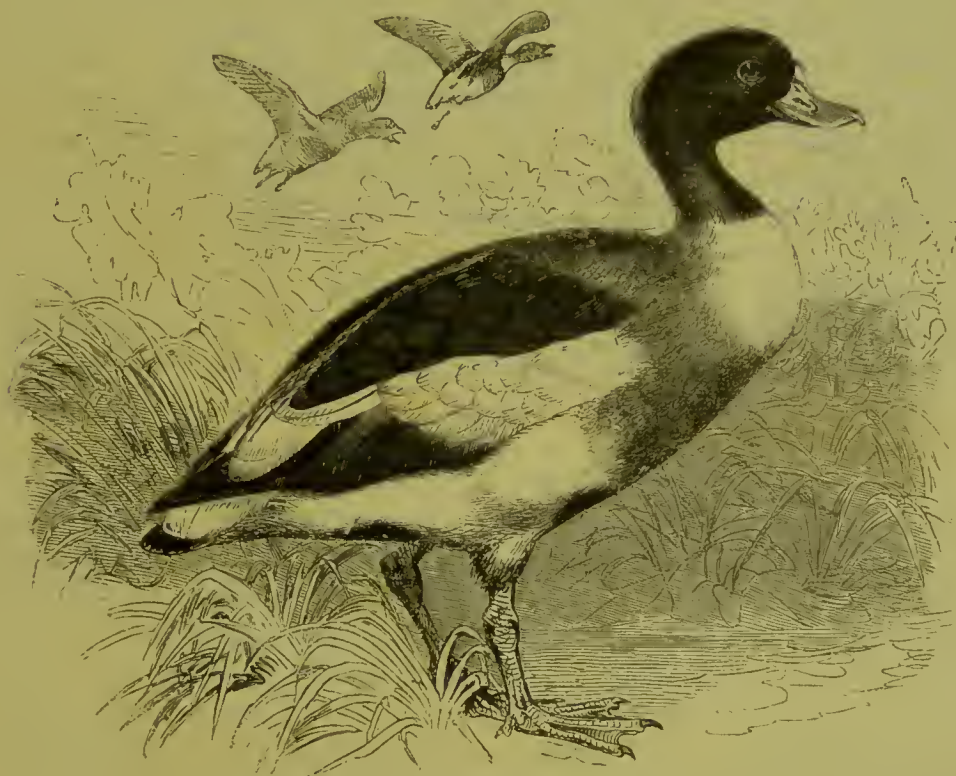


LAGUNA ARCTICA — LOON — GAVIA ARCTICA

clefts of rocks ; others in hollow trees, or even among the branches, some making use of the deserted nests of land birds ; while others build upon the ground a rude structure composed of stalks and leaves, warmly lined with down. The number of eggs varies in different species from six to sixteen ; the period of incubation extends from twenty-one to twenty-four days.

THE RUDDY SHELDRAKE, OR BRAHMINY DUCK.

The RUDDY SHELDRAKE, or BRAHMINY DUCK (*Casarca rutila*), represents a group possessing slender bodies, moderate-sized wings, and somewhat remarkably coloured plumage, which differs but little in the sexes. In this species the body is almost entirely of a bright rust-red ; the cheek is yellowish white ; the neck reddish yellow ; the wing is decorated with a glossy green patch, and has



THE SHELDRAKE (*Vulpanser tadorna*). ONE-FOURTH NATURAL SIZE.

its covers of a pure white ; the margins of the wings, upper tail-covers, quills, and tail, are glossy greenish black. During the breeding season the male has a clearly-defined band of greenish black on the lower throat ; the female rarely exhibits this collar, and is smaller than her mate ; her entire plumage is also less brightly coloured, and her face of a whitish shade ; the eye is light brown ; the beak black ; and the foot lead-grey. This species is from twenty-four inches to twenty-five inches long and forty-four inches broad ; the wing measures sixteen inches, and the tail seven inches. The Ruddy Sheldrakes inhabit Central Asia, and from thence spread in an easterly direction to the Upper Amoor, and westwards as far as Morocco. In the course of their wanderings they are pretty regular visitors to Greece and South Italy. As winter guests they are well known throughout the Indian Peninsula, and are by no means uncommon upon the lakes of Egypt. In Tunis, Algiers, and Morocco they are abundant, but do not apparently extend their range into the interior of Africa. The gait of this beautiful bird is light and elegant ; it does not waddle as most Ducks do, but steps out like a Goose ;

it is an excellent swimmer, and upon an emergency dives with facility. Its flight is strong and enduring, and its voice loud, but by no means unpleasing. Its food consists principally of vegetable materials; Jerdon, indeed, says he has been told that it will sometimes eat carrion, but adds that he has never seen it so employed, though he has often observed it feeding in fields of corn. Until the approach of the breeding season the Brahminy Ducks live very peaceably in company with other swimming birds, but about that time they become very pugnacious and quarrelsome. Towards the end of April or the beginning of May the different pairs retire to their appropriate nesting-places, which are generally in holes in the ground. In North-west Africa, Calvin found one of their nests in the cleft of a perpendicular rock, which had likewise been the nesting-place of Robins, Kites, and Vultures. In Siberia they not unfrequently build in the holes of Siberian marmots, and occasionally in hollow trees. The nest, which is composed of dry grass and lined with down, usually contains from four to six roundish thin-shelled eggs, of a glossy white or yellowish white. As soon as the young brood are sufficiently dry after their escape from the shell they leap from the nest and make their way to the nearest pond, where, under the careful superintendence of their parents, they pass the earlier part of their lives. At first they are clad in a suit of down, which is brownish grey upon the upper part of the body with the exception of a whitish spot upon the breast; the lower surface is of a dirty white. Pallas states that in Mongolia these birds are regarded as sacred.

The SHELDRAKES (*Vulpanser*) differ from the above birds in the formation of their beak, the comparative shortness of their wings and legs, and in the coloration of their plumage. In this group the upper mandible is broadest towards its extremity, and in the male exhibits an excrescence at its base, which swells considerably during the breeding season, and afterwards almost entirely disappears.

THE COMMON SHELDRAKE,

The COMMON SHELDRAKE (*Vulpanser tadorna*) is a beautiful bird, with head and neck of dark glossy green. The shoulders exhibit two large black spots; a patch on the breast, the centre of the back, the wing-covers, side of the body and upper portion of the tail are pure white. The centre of the breast and belly are greyish black; a broad band on the neck, and some of the upper secondaries are of a bright reddish brown. The lower tail-covers are yellowish; the quills blackish grey, and the wings decorated with a metallic green patch. The eye is dark rust-red, the beak carmine-red, and foot flesh-brown. This species is two feet long, and three feet and a half broad; the wing measures fourteen inches, and the tail four inches and a half. The female is similarly but less beautifully coloured. In young birds the nape is grey, the upper part of the back and under side are yellowish grey; there is also no band upon their breasts. The range of the Sheldrake extends north to about the middle of Sweden, and south as far as North Africa, where they are to be met with on every lake during the winter, and make their appearance in countless multitudes. They are likewise numerous upon the coasts of China and Japan, as well as upon the great lakes of Siberia and Central Asia; nevertheless, they decidedly prefer salt water to fresh, and are always most abundant upon the sea itself, or upon salt-water lakes. In Great Britain these birds are indigenous, and breed upon every part of the coast. Even in extensive collections of water-fowl, where various species of Ducks are seen in close proximity to each other, the Sheldrakes are conspicuously beautiful; but when seen swimming on the sea or crowding the surface of some large lake, the eye is enchanted with the variety and elegance of their movements. In Africa they add an unspeakable charm to the lake scenery, the brilliancy and liveliness of their colours rendering them prominent objects at a very considerable distance. Even upon the islands near Schleswig, Jutland, and Denmark, where they are almost household birds, they invariably call forth the admiration of the beholder. In their general

habits they bear some resemblance to the Brahminy Ducks before described ; their gait, however, is somewhat heavier, and they swim with greater facility. In their voices there is no resemblance whatever between the two species. The call-note of the female is a loud "Quack," and that of the male a deep "Koer," while during the pairing season they give utterance to a peculiar whistle. Their food is preferably vegetable, consisting of the tender parts of sea-weeds and other plants which abound in salt water ; they will likewise eat grass, and when in confinement occasionally devour small fishes, molluscs, and small crustaceans ; neither do they altogether refuse flesh. These birds seek their food less by swimming than by wading. As the tide recedes they may be seen running like shore-birds just at the margin of the water, and carefully examining the contents of every little pool. During the morning they visit the fields, in order to hunt for insects and grubs, as well as for vegetable matter ; they sometimes for a like purpose resort to marshes and swampy places. The Common Sheldrakes construct their nests only in holes or burrows excavated in the earth. "Whoever has been much in the vicinity of the sea-coast," says Bodinus, "will probably have observed with surprise that a pair or two of these birds, seen at the distance of half a mile or so, in some open spot, suddenly disappear in a most unaccountable manner, and on visiting the place will find that they have taken refuge underground, in some hole formed by a fox, badger, or rabbit ; nay, more, that they have positively taken up their abode in this strange locality even while its formidable four-footed occupant is actually in possession of the premises. It is now an undeniable fact, established by the concurrent testimony of numerous observers, that the Sheldrake and the fox not unfrequently dwell in the same hole, and that the latter, who spares no other bird, does not molest or injure its adventurous lodger." We have certainly not been able to verify this statement by personal observations, and have moreover found on one occasion the wings and feathers of a Sheldrake lying close to a hole inhabited by a fox ; but there was nothing to show that the fox had been the murderer, even under circumstances so suspicious, seeing that the spot was in the vicinity of a wood much frequented by Hawks and other birds of prey. Were we asked why the bloodthirsty quadruped should thus spare the poor Duck, we should confidently reply that it was on account of the extraordinary courage of the bird. We have ourselves seen a young Sheldrake, not many days old, defend itself valorously against animals of large size, such as fowls, small dogs, and rabbits. Instead of running away, it showed a bold front, holding its neck outstretched, angrily repelling every attack, and never seeming to think of retreating until its assailant had retired. The old birds, more especially during the breeding season, are equally courageous ; the male stands bravely forward, and confronts his opponent with loud hisses, until, daunted by his angry, threatening demeanour, the enemy sneaks away. Having put his adversary to flight, he returns to his mate, who stands up nobly to assist her spouse, and both give utterance to their mutual congratulations over the victory in loud screams and frequent caresses.

The following particulars concerning the breeding of these birds, by the forester Grömelbein, will be read with interest. Towards the end of May, Grömelbein, while busily employed in a wood at some distance from the coast, observed a pair of Sheldrakes that flew around his party several times in succession, and as often flew towards and alighted on a hill of sand at some little distance, where the male always stationed himself as if to keep watch, while the female leisurely entered a hole, in which she remained about a quarter of an hour. When she again came to the surface she approached her mate, and after apparently holding a consultation they both took a circular flight into some neighbouring fields, where they alighted on spots quite remote from each other, evidently for the purpose of misleading anyone who might be watching their movements. On observing this manœuvre, Grömelbein hastened to the hill, and there found the hole of a fox, at the entrance of which were numerous footmarks of the fox and of the Ducks, together with recent

excreta from both. After watching the birds, however, for some days, it was discovered that, with the view of deceiving the men, they had only made a pretence of having their nest in the hole above mentioned, and that their real residence was another much larger excavation, in the joint occupation of a bitch-fox and a badger. This second hole being carefully watched, it was seen that the badger was in the habit of walking in and out of his abode, which was subsequently found to be ten feet deep, without troubling himself at all about his feathered visitors, whose footmarks were traceable to a depth of seven feet. There were, however, other holes belonging to the same den, through which the fox was also in the habit of passing. The ground before these entrances was trampled smooth by the feet of the Ducks, and as clearly impressed with the footmarks of the fox. On perceiving this, Grömelbein concealed himself behind a wall in such a manner as to be able to watch all their proceedings, nor had he long to wait before he saw the sly Sheldrakes paying their accustomed visit to the labourers and the sand-hill above mentioned; after which, flying close to the ground, they came to the real nesting-place, when, after carefully looking around them, they walked into the fox-hole as quietly and unconsciously as Ducks in a farmyard would go to their roosting-place. There they remained about half an hour, when they again made their appearance, climbed hastily to the top of the hill beneath which the den was situated, and finding, as they thought, the coast clear, flew off to the meadows.

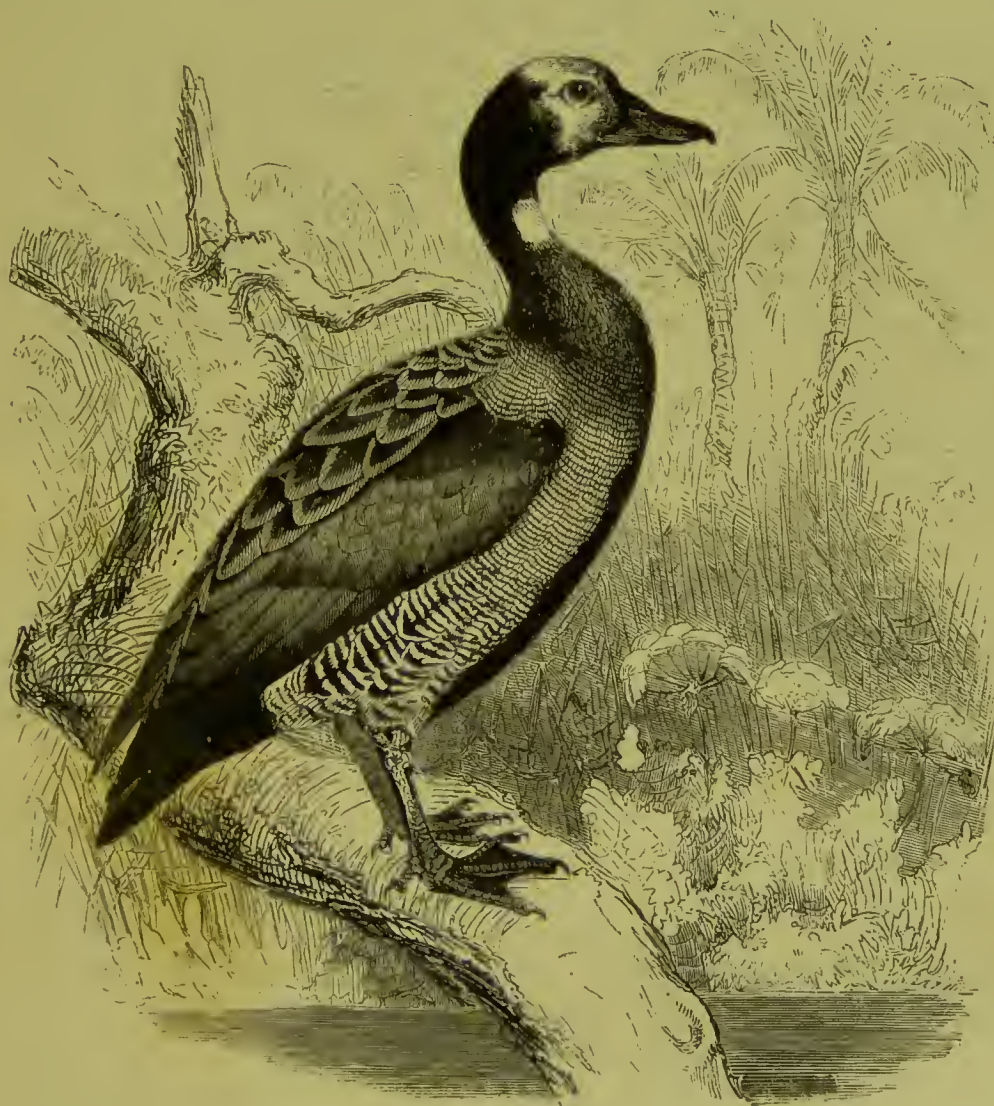
In the Island of Sylt and others off the coast of Schleswig, the inhabitants construct artificial burrows, covered with movable lids, near which at the proper season they place quantities of broom and moss, so that the coming birds may find everything ready. These consequently take up their abode in the prepared burrows without the slightest scruple, and that sometimes quite close to the houses of their owners; nay, they at length become so familiarised with their keepers that they may be said to be in a state of semi-domestication. In these burrows the females, if not disturbed, will lay from seven to twelve large, smooth, white, thin-shelled eggs; but if the eggs are gradually taken from the nest, as they are at Sylt, the females will go on laying till they have laid twenty or thirty. When the mother bird begins to sit, she carefully surrounds her eggs with down, and when she leaves her nest covers them with the same warm material. After the lapse of about twenty-six days, the young make their appearance, and soon follow their mother to the neighbouring moors, generally stopping, however, to have a swim in a pond of fresh water that is found on the road thither. To the inhabitants of Sylt and other islands in the North Sea, it appears, therefore, that the Sheldrakes are objects of considerable attention. The eggs serve as important additions to their table; and the down from their nests, scarcely inferior to that of the Eider, is extremely valuable. The flesh of these birds is not much esteemed, having a rancid or oily taste and a disagreeable smell; they are therefore never killed, but, on the contrary, are protected by the inhabitants of the islands they frequent.

The TREE DUCKS (*Dendrocygna*) form a group having a high slender body, moderately long neck, delicately-shaped head, and weak bill; the legs are long, the wings blunt, with the third and fourth quills longer than the rest; the tail is rounded at its extremity, and the plumage variegated.

THE WIDOW DUCK.

The WIDOW DUCK (*Dendrocygna viduata*) has the face and throat white, shaded with reddish brown on the brow and cheeks; the back of head, nape, and sides of the neck are bright reddish brown; the sides of the breast and the back reddish olive, darkly spotted and marked; the long lower shoulder-feathers are olive-brown edged with yellowish white; the lower back, centre of tail, and entire under side below the breast are black; the sides of the body are greyish white, striped with

blackish brown ; the upper wing-covers are bright reddish brown ; secondary quills olive-brown, with green edges, and the quills and tail-feathers greenish black ; the eye is reddish brown, beak black, with a dark grey stripe near its nail-like tip ; the foot is lead-grey. This species is eighteen inches long and thirty-two inches broad ; the wing measures eight inches and three-quarters, the tail two inches and two-thirds. The female closely resembles her mate. All travellers who have visited South America describe this bird as occurring in amazing multitudes, more especially in the marshy



THE WIDOW DUCK (*Dendrocygna viduata*). ONE-FOURTH NATURAL SIZE.

grounds of the prairies ; and travellers in Africa assert that it is equally abundant in the southern and western regions of that continent. Upon the Upper Blue Nile we have ourselves several times met with it in extraordinarily large flocks, which, in closely-packed ranks, covered the banks of the river to a great distance, and when they rose into the air had the appearance of a dense cloud. Heuglin states that the males and females of these birds remain constantly separate from each other ; such a statement, however, we can positively contradict, seeing that we have killed individuals of both sexes at a single shot. We are by no means well informed as to the history of these birds, and about their mode of breeding we know little or nothing certainly. The Widow Duck is

distinguishable among its congeners by a gait which sometimes resembles that of a Goose, as also by the heaviness of its flight, but more particularly by its predilection for sandbanks and sandy places upon the riverside, to which, when driven away, it invariably returns. The Prince von Wied tells us that at Sertong, in the province of Bahia, it is very abundant in swampy, overflowed meadows, also in marshes, as well as in lakes and other open sheets of water; it is, likewise, often to be seen upon the sea-coast. As regards the latter statement, however, Schomburghk expressly says that he has never met with it on the sea-coast, but that in the swamps of Savannah it is particularly numerous, and with this our experience in Africa quite coincides. Of their behaviour Schomburghk gives a very pleasing sketch:—"The pretty little Bisi Ducks," says that writer, "seem to be under a ban in this neighbourhood; no sooner did we see a flock of them than men jumped at once into the water almost up to their necks, and began to shoot with their well-directed arrows as rapidly as possible into the thickest part of the flock. If the birds flew high, so that they could see the arrows, the flock immediately parted, just like a swarm of Passenger Pigeons when a Hawk swoops upon them. In the confusion of their flight they broke each other's wings, and many of them fell to the ground stunned and wounded. When two flocks of them met, the hubbub was still greater. I have on such occasions seen as many as five or even eight of them fall to the ground together, although only one of them had been hit by an arrow; and when a flock of them, under such circumstances, came within range of my gun, I have not unfrequently brought down ten or a dozen of them at one shot." We learn further from Schomburghk that these Ducks are very easily tamed, and the Indians generally keep them domesticated in the neighbourhood of their dwellings.

THE WILD DUCK.

The WILD DUCK (*Anas boschas*) represents a group characterised by their powerful body, short neck, broad slightly-raised bill, which terminates in a decidedly-curved and nail-like tip; their moderately high feet, placed in the centre of the body, and furnished with long toes; and their rounded tail—the feathers on the upper covers of which curl upwards. The coloration of the plumage varies considerably in the sexes. In the male bird the head and upper neck are green; the fore part of the breast is brown, shaded with a variety of tints; the shoulder-feathers are greyish white; the back is a mixture of black and brown; the upper wings are decorated with a patch of fine blue, bordered with white; the lower back and rump are blackish green, and the rest of the under side greyish white, delicately lined with black; a narrow white band divides the green throat from the reddish brown breast; the upper wing-covers are blackish green, the lower covers deep black, and the quills dark grey. The eye is light brown, beak greenish yellow, and foot pale red. During the autumn the male assumes a dress similar to that of the female. The latter is reddish grey, darkly spotted on the head and neck; her crown is blackish brown, and back brown, its feathers marked and edged with various shades of grey, yellow, and black. The lower throat and crop are light chestnut-brown, decorated with black crescent-shaped patches; the rest of the under side is spotted with brown. This fine bird is twenty-four inches long and forty inches broad; the wing measures eleven inches and the tail three and a half. The Wild Duck well deserves the epithet *Communis*, applied to it by some writers, seeing that its range extends not only over the northern hemisphere in the vicinity of the Pole, but during the winter extends southwards to the very verge of the torrid zone. In the extreme north it must be regarded as a bird of passage, seeing that on the approach of winter it migrates regularly towards the south, returning again northwards when the intensity of the cold has abated. In more southern countries it is merely a wanderer. In October and November the Wild Ducks assemble in large flocks, and commence their migrations towards more hospitable climates; most of them make their way as far as Italy, Greece, and Spain; some even visit Northern

Africa, or corresponding latitudes on the Asiatic continent. In the vicinity of the lakes of Southern Europe they may about this time be seen arriving in flocks of thousands and hundreds of thousands, when they alight upon the water, covering a space of half a square league in extent; and when they rise all at once into the air, producing a rushing sound, audible at a great distance, and resembling the roar of the surf on a storm-beaten shore. In February, or at the latest in March, they commence their return journey, hence they are sometimes called on the Continent "March Ducks." It is only occasionally that they are to be seen upon the sea-coast. These must be considered as strictly belonging to the race of fresh-water Ducks, and it is to lakes and ponds thickly covered with sedges and water-plants that they most generally resort. Waters which are here and there free from herbage, more especially if overhung at the sides with bushes and marsh-plants, afford them their favourite resort, and it is in such places that they generally pass the winter and rear their progeny; in similar localities they likewise procure the greater part of their food, and from thence make little excursions to the ponds and lakes, ditches and fields, that may happen to be in the vicinity. They are very seldom seen upon open waters, but generally seek the shelter of little islands and shallow places overgrown with water-plants, where, half running and half wading, they can search with their beaks for whatever nutriment is to be found. Wild Ducks may be classed with the most gluttonous birds with which we are acquainted. They devour the leaves and tender tops of water-plants, the buds, young shoots, and ripe seeds, being in turn equally acceptable; and are likewise exceedingly fond of the different kinds of corn and of bulbous roots. They, moreover, eagerly hunt after all sorts of small animals, from worms and snails to tadpoles, frogs, and fishes; they seem, indeed, to be always suffering from the pangs of hunger, and so long as they are awake are constantly endeavouring to alleviate them. In their general habits the Wild Ducks closely resemble our tame species, which are in reality their lineal descendants; the tame Ducks are, however, far behind their progenitors in watchfulness, energy, and vigour. They swim, dive, and fly much in the same manner, but decidedly better than tame Ducks; their voice, likewise, is precisely similar. The loud, short "Quack" of the female, and the duller "Quack" of the male; the conversational "Weck, weck," and the call-note, "Wack, wack;" the alarm-cry, "Katsch," or "Rab, rab;" in short, all the sounds with which we are familiar in the tame Ducks are exactly repeated by their wild relatives. Soon after their arrival, the Wild Ducks begin to choose their mates, the selection of course involving many a battle between the rival males; but their partners do not need to be won by a prolonged courtship. Their habit of associating in large flocks is at once laid aside, and they attach themselves to their spouses with ardent devotion. The place selected for the nest is generally some quiet, retired, dry spot under a bush or concealed by herbage, and very generally near the water, but sometimes at a considerable distance from it. Occasionally and, indeed, not unfrequently, they will take possession of some nest placed in a tree—such, for example, as that of a Crow. Their proper nest is constructed of the stems and leaves of various plants, loosely put together, so as to present internally a rounded cavity, which at a subsequent period is warmly lined with down and feathers. The brood consists of from eight to sixteen eggs, of a somewhat elongated shape, hard, smooth-shelled, and of a greyish white colour; in fact, exactly similar to those of the domesticated Duck. The period of incubation, during which the female, who alone broods, sits with the greatest patience and self-devotion, extends over from twenty to twenty-eight days. The newly-hatched young ones remain perhaps for a single day in the nest, and are then taken to the water. Those that are born in a nest placed at a considerable elevation simply spring out and fall upon the ground, without receiving the slightest injury. It is quite a mistake to say, as some writers have done, that they are carried down by their mother in her beak.

During the first few days of their lives they endeavour to conceal themselves as much as possible among the reeds and water-plants; and it is only when their wings have to be tried that they

venture to show themselves in open water. Meanwhile the mother takes the greatest pains to conceal them from observation. In case of danger she makes every endeavour to draw it upon herself, or if the assailants are such as to make it at all practicable, she flies at them with the utmost fury, and uses every effort to drive them away. The young brood follow her with every demonstration of affection; they watch her slightest warning, listen to every sound she utters, and when bidden, at once hide themselves among weeds or sink down between the inequalities of the ground. Their growth is exceedingly rapid, so that in about six weeks they are able to fly.



THE WILD DUCK (*Anas boschas*).

Whilst the mother is thus busily employed in defending and instructing her offspring, the male Duck gives himself very little trouble about his family; sometimes he takes another mate, but if this is not the case, he joins his male companions in their recreations on the water. Even before the eggs are hatched, the old birds begin to moult their feathers, and soon exchange their beautiful nuptial dress for the duller plumage in which they appear during the four months of summer, after which, partly by moulting, and partly by change of colour in their feathers, they resume their splendid autumnal garb. At this latter period the young birds likewise undergo their first moult, after which the family becomes again united. Both parents and their progeny remain together during the autumn, and ultimately fly in company with each other to their winter quarters.

The flesh of these birds is so surpassingly excellent, that the chase after them is everywhere

carried on with unrelenting perseverance. It would lead us too far from our subject were we here even to glance at the multiplied contrivances whereby they are killed or captured, sometimes in immense numbers. The markets of Italy, Greece, Spain, and Egypt, are, during the winter season, filled to overflowing with Ducks of all descriptions, among which the Wild Duck is by far the most plentiful; they are then everywhere to be purchased for a few pence. In Greece, however, the mode of catching them is somewhat peculiar. On many of the lakes in that country, which are for the most part covered with vegetation, there are generally long patches of open water, indicating those parts



THE WOOD OR SUMMER DUCK (*Aix sponsa*). ONE-FOURTH NATURAL SIZE.

which are too deep to allow of the growth of plants from the bottom. As winter sets in these open spaces are closed by nets prepared for the purpose, and during the passage of the Ducks the evenings are devoted to their capture. When it begins to grow dark, two boats, efficiently manned, and each of them furnished with a lantern and a bell, put off in opposite directions towards the enclosed space, and as they row slowly along, display their lanterns, ring their bells, and thus drive before them the Ducks which, instead of taking flight, crowd outwards towards the nets, with which they are ultimately enclosed. From Von der Mühle and Lindermayer we learn that they are sometimes also taken by means of a casting-net. To accomplish this, the sportsmen, having ascertained the position of the Ducks, row slowly towards them with muffled oars, at the same time occupying their attention by displaying a lighted lantern suspended at the end of a long pole, carried at the bow of the boat. The curiosity of the Ducks being thus excited, they approach the light in great numbers without

seeing their enemies below, who thus succeed in throwing a net over them, and capturing a score or so at a single haul.

THE WOOD OR SUMMER DUCK.

The WOOD or SUMMER DUCK (*Aix sponsa*) represents a group possessing a slender body, moderately long, thin neck, a large crested head, and a short slender bill, which terminates in a hooked and nail-like tip. In these birds the short powerful foot is placed far backward; the narrow, pointed wing has its first and second quill longer than the rest; and the very broad strong tail is composed of sixteen feathers, and rounded at its extremity. The plumage of this species is magnificently coloured, and forms a crest at the back of the head; a small space between the eyes and the base of upper mandible is bare. This beautiful bird has the feathers on the crown of head and the cheeks of glossy dark green; the sides of head and a patch on sides of the neck are purplish green shaded with blue; the crest is golden green, decorated with two narrow white stripes that commence on the brow; the sides of the upper neck and breast are bright reddish brown dotted with white; some of the shoulder-feathers, hinder parts of back, and upper tail-covers, are blackish green; the rest of the shoulder-feathers, the primary quills, and tail, greenish purple, shaded with blue and glossy black; some of the exterior tail-feathers are prolonged, and of an orange hue; the lower tail-covers are brown; the chin, throat, a band on the upper neck, the centre of the breast, and the belly, are white; the sides of the body yellowish grey, marked with black; some of the long feathers on these parts are black edged with white; the eye is bright red; eyelid orange; beak whitish, with reddish base and black tip; the foot is reddish yellow. This species is seventeen inches and a half long and twenty-seven and a half broad; the wing measures eight and a half, and tail four inches. The female is somewhat smaller than her mate, and without an actual crest upon her head; her plumage is deep brownish green on the back, shaded with purple and spotted; the head is greyish green, neck brownish grey, gullet white, breast white spotted with brown, and belly pure white; the eyes are surrounded by a broad white line, which passes from thence as far as the region of the ear. The Summer Duck is a native of America, where it occupies the United States, and thence wanders regularly to the central portions of that continent and to the West Indies; it has also been killed in Great Britain, France, and Germany, but most probably these specimens were not stragglers but birds that had been reared in aviaries. According to Audubon, the flight of the Wood Duck is remarkable for its speed, and the ease and elegance with which it is performed. "It passes," he says, "through the wood, and even among the branches of trees, with as much facility as the Passenger Pigeon, and when removing from some secluded haunt to its breeding-grounds, at the approach of night it shoots over the trees like a meteor, scarcely emitting any sound from its wings." Wilson asserts that these birds seldom fly in parties of more than three or four individuals together; but Audubon expresses his surprise at such a statement from the admired author of "American Ornithology," and assures his readers that he has "seen hundreds in a single flock, and has known fifteen to be killed by a single shot." In disposition the Wood Duck is naturally bold and fearless; but, if molested, soon becomes shy and cautious. When in captivity it is very readily tamed, and exhibits much attachment to those who feed it. In their natural state these birds subsist upon grain, reeds, delicate shoots of plants, worms, snails, and insects, the latter being gleaned from the trees, or snapped at as they float through the air; they will also readily devour small reptiles, and a variety of similar fare. When tame, they can be reared on corn or fish, and in fact will eat almost anything that may be offered them. The period of incubation commences about March, and at this season the parties separate in pairs and commence their search for a convenient breeding-place. For this purpose a squirrel's or Woodpecker's hole is usually selected as affording all that they require, and into this the female at once creeps in order to make the preparations necessary for the



ANAS PLATYRHYNOS — MANDARIN DUCK

reception of her eggs, while her faithful spouse keeps watch outside. About May, or in some localities a month later, the eggs, from seven to twelve in number, are deposited; they are small, oval, and have a smooth white or yellowish shell. As soon as all the eggs are laid, the female covers them with down, spreading it thickly over them whenever she quits her charge. No sooner is the mother burdened with family cares than, as is the case with some other species, she is deserted by her hitherto devoted mate, who joins his male companions and roams with them over neighbouring pieces of water until the close of the moulting season. The period of incubation lasts about twenty-five days. "If," says Audubon, "the nest of the Wood Duck is placed immediately over the water, the young, the moment they are hatched, scramble to the mouth of the hole, launch into the air with their little wings and feet spread out, and drop into their favourite element; but whenever their birthplace is at some distance from it, the mother carries them to it one by one in her bill, holding them so as not to injure their tender frames. On several occasions, however, when the hole was thirty, forty, or more yards from a pool or other piece of water, I observed the mother suffered the young to fall on the grasses and dried leaves beneath the trees, and afterwards led them to the nearest edge of the next pool or creek. At this early age the young answer to their parent's call with a mellow 'Pee, pee, pee,' often and rapidly repeated. The call of the mother at such time is soft, low, and prolonged, resembling the syllables 'Pe-ēē, pe-ēē.' The watch-note of the male, which resembles 'Hoe-ēēk,' is never uttered by the female; indeed, the male himself seldom uses it unless alarmed by some uncommon sound or the sight of a distant enemy, or when intent on calling passing birds of his own species."

Wilson mentions having heard from an eye-witness that a female of this species was seen carrying down thirteen young from her nest to the ground in the space of ten minutes. This she accomplished by seizing them one by one in her bill by the wing or back of the neck, and thus bearing them to the foot of the tree, whence she afterwards led them to the water.

THE CHINESE TEAL, OR MANDARIN DUCK.

The CHINESE TEAL, or MANDARIN DUCK (*Aix galericulata*), represents the group *Cosmonessa*, comprising birds closely resembling the Summer Ducks above described. This well-known species is not merely adorned with a crest, but has a flowing collar, and two remarkable fans or plumes situated on the shoulders. In the gorgeously apparelled male the green crest is purplish blue in front, with brown and green at the sides and back; a broad, brownish yellow line shading into yellowish white passes from the eyes to the nape; the long-pointed collar-feathers are bright red, the front of the neck and sides of the breast brownish red. The back-feathers are light brown; the fan-like shoulder-plumes steel-blue on the outer and brownish yellow on the inner web, which is edged with black and white. The sides of the breast exhibit two white and two black stripes; the sides of body are yellowish grey darkly marked; the under parts white, and the quills brownish grey bordered with white on the outer web. The eye is yellowish red, the beak red, with a white tip, and the foot reddish yellow. The female closely resembles the female *Aix sponsa* in appearance. The brilliant plumage of the male is thrown off from May to August, when the bird also loses its crest and wing-fans, and assumes a sober-tinted dress similar to that of his mate. The Mandarin Ducks are natives of Japan and China, and are highly esteemed in the latter country as exhibiting, it is supposed, a most striking example of conjugal attachment and fidelity. A pair of these birds are frequently placed in a gaily-decorated cage, and carried in their marriage processions, and are afterwards presented to the bride and bridegroom as worthy objects of their emulation. So highly, indeed, are they valued, that Dr. Bennett, we are told, was informed by a friend whom he commissioned to buy him a pair, that he could send him two live mandarins to Australia with far more ease than a pair of Mandarin Ducks.

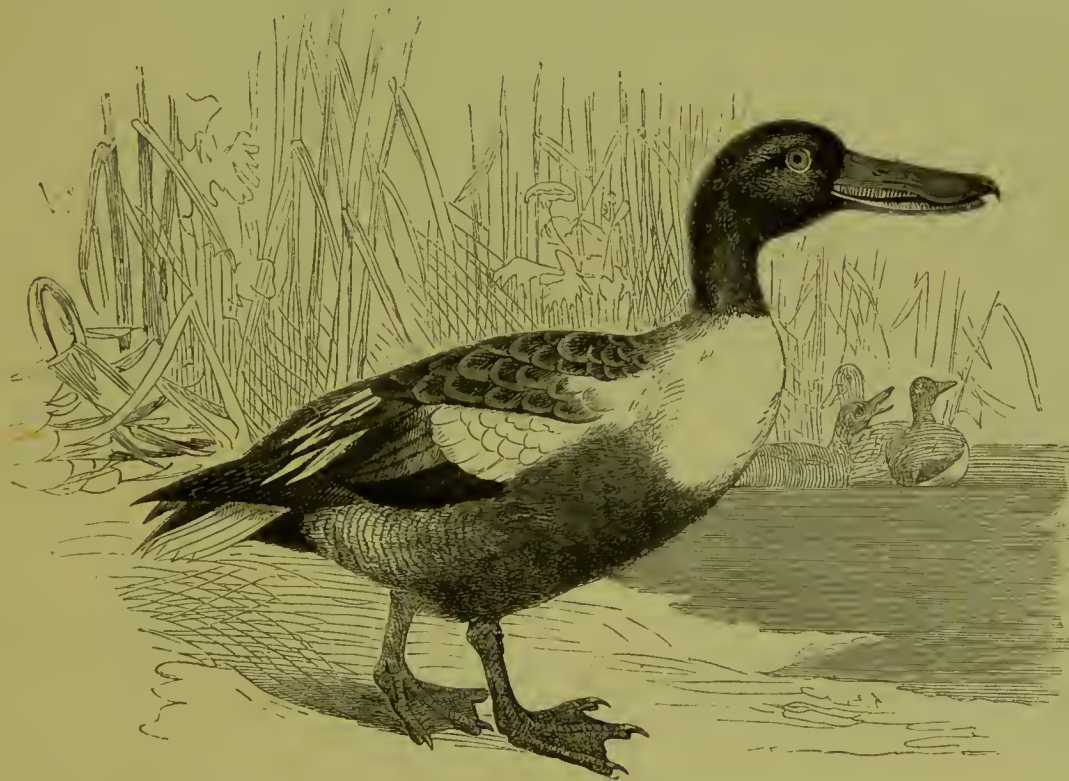
To the above naturalist we are indebted for the following interesting particulars concerning the attachment to their mates that characterises these beautiful birds :—"One day Mr. Beales' aviary at Macao was broken open, and the male bird stolen; his poor mate remained in a retired part of the aviary and refused to be comforted. She would scarcely take any food, and allowed her plumage to become dirty; in vain did another Drake endeavour to console her for her loss, she rejected all his advances, and remained disconsolate. After some time the lost bird was discovered in the hut of a Chinese of the lower class, and was brought back again. As soon as he recognised his old abode, he expressed his joy by flapping his wings and quacking vehemently, and no sooner did his mate recognise his voice than she almost quacked to screaming with ecstasy, and flew to meet him, and both expressed their joy by crossing necks and quacking together. Next morning the returned spouse fell upon the unfortunate Drake who had made advances to his mate in his absence, pecked his eyes out, and otherwise so disfigured him as to occasion his death in the course of a few days." According to Schrenck, this species appears in the countries watered by the Amoor about May, and departs again at the end of August; at this season it is always met with in small or large flocks, which are so extremely shy that they rarely come within gunshot. Whilst on the wing these parties crowd closely together in front, whilst the birds in the rear occupy a comparatively free space; the same authority states he has repeatedly seen Mandarin Ducks perching upon trees. These beautiful birds have been successfully reared in the London Zoological Gardens, some being hatched under the parent, and others under a Domestic Hen; the latter hatching the eggs two days sooner than the mother. The eggs are of a creamy brown colour.

THE SHOVELER DUCK.

The SHOVELER DUCK (*Spatula clypeata*) represents a group distinguished by their very remarkable and large bill, slender at its base, very broad and vaulted towards its extremity, and finely denticulated at its margins. The plumage of the male of this species is much variegated. The head and upper neck are dark green; the nape, upper back, and short shoulder-feathers edged with light grey; the lower neck, crop, and the upper wing-covers are white; the rest of the wing is light blue, decorated with a broad white stripe and a patch of metallic green. The lower parts of the back and rump are blackish green; the breast and belly chestnut-brown. The lower tail-covers are black, the quills brown, the centre tail-feathers brown bordered with white, and those at the sides more or less white. The eye is golden yellow, the bill black, and the foot reddish yellow. This bird is nineteen inches long and thirty inches broad; the wing measures ten inches and a half, and tail two and a half. The plumage of the female is greyish yellow, darkly spotted; the upper wing is grey, with a small greyish green patch, and her bill greenish yellow, edged with pale red. The summer costume of the male resembles that of his mate. The Shoveler Duck inhabits the temperate regions of the earth, and only occasionally wanders into northern latitudes. In Europe it is met with in all parts as far north as Norway. In Great Britain it is usually only a winter visitor, but occasionally remains to breed. From these temperate latitudes it wanders forth during the winter to Mexico, North and Central Africa, the South of China, and India. Audubon, who met with this bird in the United States, where he tells us it is rare, says :—"The Shoveler walks prettily, and I have often admired its movements in the puddles formed by heavy dashes of rain in our Southern cornfields, where I have found it in company with the Wood Duck, Mallard, and Pintail. Its flight resembles that of the Blue-winged Teal, and in tenderness as well as in flavour its flesh rivals that of that beautiful bird as an article of food. No sportsman who is a judge will ever pass a Shoveler to shoot a Canvas-back. It is rarely ever found on salt water, and then only when compelled to resort thither." The Shoveler Ducks pass a good deal of the day on dry land; they, however, principally frequent lakes, marshes,

rivers, and muddy shores, in search of insects, molluscs, worms, and crustaceans, that form their principal means of subsistence ; they also consume grass and other vegetable matter.

The remarkable beak possessed by these birds is admirably suited for the use to which it is destined, its laminated sides being furnished with numerous nerves, which endow it with a delicate sense of touch, enabling it at once to select such matters as are fitted for sustenance. The nest, which is placed on a tuft of herbage, is composed of fine grass, the eggs being carefully covered with down from the mother's breast. The eggs are of a buffy white, tinged with green ; their size is about two inches two lines by one inch six lines.



THE SHOVELER DUCK (*Spatula clypeata*). ONE-FOURTH NATURAL SIZE.

THE MUSK DUCK.

The MUSK DUCK (*Cairina moschata*) is recognisable by its slender rounded body, tolerably slender neck, and large head, and by its comparatively long powerful beak, which is elevated at its base. The bare bridles are covered with large fleshy warts, and the claws are short and broad. The proportionately short wings have the third quill longer than the rest. The tail is strong and rounded, and composed of eighteen feathers. The plumage of the male is principally brownish black ; the top of the head brownish green ; the rump, wings, and rest of the upper part of the body are shaded with metallic green and purple-violet. The quills are green, shimmering with dark steel-blue ; the wing-covers mostly white, the under parts dull blackish brown ; the under tail-covers shining green ; the eye yellow ; the naked places on the face brownish black ; the warty excrescences dark red, partially spotted with black. The bill is black, with a cross stripe of blueish white just in front of the nostrils ; towards the point it is of a pale flesh-colour. Length of male, thirty-two inches ; breadth, forty-seven inches ; length of wing, fourteen inches and a half ; length of tail, seven inches and three-quarters. The female is considerably smaller than her mate, but in other respects they very much resemble each other.

All travellers who have had an opportunity of studying these Ducks in a wild state tell us that they are beautiful, lively, and well-flavoured birds, equally attractive to the naturalist and the sportsman. This species is extensively distributed throughout the South American continent, from Paraguay to Guiana, and is to be met with almost in equal numbers near the mouths of rivers flowing into the sea, and amid the swamps and marshes of wild uncultivated parts of the country. The Prince von Wied found it swimming upon rivers in the depths of the primitive forests, and also in still, secluded bays, and upon islands near the sea-coast. Schomburghk observed it at an altitude of 1,500 feet above the level of the sea. During the mid-day heat, and in the afternoon, these birds generally seek out shady places upon the shores and on sandbanks; in the morning and evening they employ themselves in searching for their food, which consists of fishes and snails, also algæ and other water-plants. They invariably pass the night upon trees, and if disturbed in the daytime always seek shelter among their branches; even those which spend their days in marshes and morasses exchange these localities as the sun descends for extensive woods, and perch upon the loftiest trees they can find. Their flight is remarkably rapid, and is always, at their first rising, accompanied by a loud noise, somewhat resembling that produced by a covey of Partridges when first flushed. Their pairing-time seems to be signalised by incessant quarrelling amongst the jealous males; and if the violence of these combats is to be judged of by the number of feathers left upon their battle-fields, they are more than usually pugnacious. Their nest is sometimes built in the hollow of a tree near the sea-shore, sometimes amid the branches. The female parent shows herself most vigilant in protecting her young ones, and should they be attacked, rushes at once to their rescue; when she has succeeded in driving back their enemies she calls them together with a peculiar cry. These birds seem to have two broods during the season—one in May, the other in September.

In Brazil, tame Musk Ducks are everywhere to be met with; indeed, at the period of the visit of the Prince von Wied there seemed to be no others kept in a state of domestication. In Germany, also, breeders have endeavoured to rear them for the table, and speak favourably of the result of their efforts. In their good opinion of these birds we cannot participate. To say nothing of their being unable to endure the cold of our winter so well as other more common species, we consider them to be positively dangerous; they not only attack and do serious damage to other Ducks, but they have been known to set upon children and injure them very seriously. Should any of their companions fall under their displeasure, they follow them unremittingly by land or water, pluck their feathers off and bite them savagely; indeed, they not unfrequently kill them outright by swimming after them and holding them so long under water that they are drowned.

The DIVING DUCKS (*Fuligulæ*) were formerly considered as belonging to the same race as the preceding, from which they are now properly separated, seeing that they have no more in common with them than Geese or Swans. The Diving Ducks are at once recognisable by their short, broad, plump body, by their short thick neck, their large head, and moderate-sized beak; the latter is broad, furnished with very short teeth, and occasionally somewhat enlarged at the base. The tarsi are short, feathered quite to the heel, and compressed laterally. The anterior toes are large, long, and strongly webbed. The wings are short and vaulted, the two first quills being the longest. The tail is short, but broad, consisting of from fourteen to eighteen close-set feathers; the general plumage is thick and close, differing in colour according to sex and age, and on the head is generally prolonged into a tuft or crest, which is rendered more conspicuous by the brightness of its colours. These Ducks, in correspondence with their power of diving, always prefer open deep water to such as is either shallow or overgrown with plants. The greater number of them live upon the sea, and only visit fresh water during the breeding season. There are, however, some that must be considered as fresh-water birds,

seeing that they spend the greater portion of their lives upon ponds, lakes, or rivers. In consequence of the backward position of their legs, they are obliged, when they stand or walk, to keep themselves very upright; indeed, their gait can scarcely be called a waddle, inasmuch as it is with difficulty that they stagger along. Their flight is, perhaps, better than that of most other Ducks, and when once on the wing they move pretty rapidly through the air. In the water they are quite in their proper element; their broad powerful body is so deeply immersed that only a small portion of the top of the back is visible, and their tail touches the surface of the water. As they row themselves nimbly along, striking well out their broadly-webbed feet, they tilt their body tail upwards, and disappear with a single stroke. These birds are not, like the Divers, able to catch their prey by pursuing it under water; when they dive they seem to plunge more or less perpendicularly down to the bottom, and, after a about a minute's absence, again make their appearance nearly upon the same spot from whence they vanished. As it is from the bottom of the water that they obtain their food, even those inhabiting fresh water have necessarily to dive to a considerable depth; whilst those that live in the sea must occasionally plunge still deeper, even to the depth of fifty or sixty fathoms—a fact of which it is easy to convince oneself by examining the contents of their stomachs. A few of them seem to prefer a vegetable diet, but the greater number live upon small bivalve shell-fish and other mollusca; they likewise eat worms, crustaceans, and fishes, while those that inhabit fresh water also feed upon aquatic insects. The booty thus procured from the bottom is also swallowed under water. The Diving Ducks, when employed in fishing for their food, only come to the surface to breathe. Their voice is totally different from that of the Swimming Ducks; instead of quacking they only screech. The manner of their breeding agrees pretty closely with that of ordinary Ducks; still, however, there are points of difference. They breed more in company with each other, and sometimes form regular settlements. Two females even of different species will occasionally lay their eggs in the same nest, sharing the duties of incubation and the charge of the young brood. Some individuals exhibit a sort of mania for brooding; they will slip into the nests of other birds, roll away the eggs, and take possession of them, or even tempt the nestlings away from their proper parents in order to take them under their own care. The eggs are rounder, the shells more closely-grained than those of the Common Ducks, but in other respects resemble them. Some Diving Ducks are valuable on account of the down with which they line their nests, others on account of the excellence of their flesh, but, generally speaking, the latter is rank and ill-flavoured.

The EIDER DUCKS (*Somateria*) first claim our attention, inasmuch as they are not only the largest and most beautiful of the Diving Ducks, but also the most useful members of the family, ornamenting the seas that they frequent, and conferring inestimable benefit upon the inhabitants of the inhospitable coasts where they are common. Apart from their very considerable size, the Eider Ducks are distinguishable by their long slender beak, the base of which extends up the forehead, and is divided by a triangular projection of the feathers; the upper mandible, which is brightly coloured, terminates in a large nail-like appendage, covering the entire anterior margin of the bill; the tarsi are short, the feet broad-soled, and the toes long; the wings are of moderate length, the second primary quill being the longest; the tertiary quills, which are sickle-shaped, are deflected, and prolonged so as to overlap the primaries; the tail, which is slightly rounded at its extremity, consists of fourteen or sixteen tapering feathers. The general plumage is soft, thick, and fleecy. In the adult male the prevailing colours are simply black and white; the head, however, is ornamented with sea-green, and the breast suffused with roseate pink or brownish yellow; in one species smalt-blue is likewise observable. The colour of the female is brownish grey or reddish brown. All the various species inhabit the colder regions of the Northern Hemisphere. Although the name-

of these Ducks is supposed to be derived from the river Eider, dividing the duchy of Holstein from Lower Schleswig, they are in reality seldom found south of the sixty-third degree of north latitude, from which point to the North Cape they are met with in vast numbers all along the coast and in the fiords that indent it in every direction, stretching sometimes 200 miles inland. The northern shores of Russia, Siberia, and the same latitudes of North America, are also inhabited by these valuable fowls.

The Eider Ducks are strictly sea-birds ; upon dry land they walk with extreme difficulty, and as they clumsily waddle along often stumble and fall down flat on the ground. Their flight seems difficult and fatiguing, requiring the sustained rapid action of their proportionately short wings. They rarely rise to any height in the air, but wing their way straight down into the water beneath, and it is only when they reach this, their proper element, that they begin to show what are their real capabilities. They swim with the body less deeply immersed than the generality of Diving Ducks, but their movements are quicker than those of any of their congeners.

The breeding-time of the Eider Ducks is rather late in the season, generally towards the end of May, sometimes in June or July ; about this period they assemble upon certain small islands, apparently selected because they are easily accessible ; the birds then separate into pairs, each pair proceeding at once to choose a place for establishing its nest, the principal conditions required being seclusion and safety. In localities where the birds are tended as though they were private property, the owners of the islands to which they resort take care to furnish a supply of old boxes, platforms built with stones, boards covered with brushwood, and other similar conveniences for breeding.

Though shy enough before, the birds now become wonderfully tame and fearless ; they not only unhesitatingly take possession of the platforms, boxes, ledges, and other contrivances prepared for them, but allow themselves to be driven to the most suitable places, without being at all alarmed or disturbed at the presence of their conductors. They come into the immediate neighbourhood of the solitary huts of their keepers, and will enter them in search of a snug corner in which to build ; indeed, it not unfrequently happens that adventurous females will take possession of bedrooms, stables, and other similar localities, to the great inconvenience and discomfort of the keeper's wife. At first the male bird always accompanies his mate in these pedestrian excursions in search of lodgings, which generally occupy them during the morning ; about noon they fly away towards the fiords or swim about upon the open sea ; but towards evening they come on shore to pass the night. While the female is employed in laying her eggs, the male watches over the nest with great perseverance and devotion ; but no sooner is the number of eggs complete, and the female begins in earnest the work of incubation, than the male flies off, leaving both nest and wife, and hastens to join the society of other males who may be disporting themselves far out at sea. Upon the rocks and "scaars" upon the coast of Norway these forlorn widowers may be seen playing together by hundreds. The nest of the Eider Duck is a very simple affair, consisting merely of a few twigs, stalks of seaweed, blades of grass, straw, and similar materials, such as can be picked up in the immediate neighbourhood, heaped together in the most slovenly manner ; the rougher the framework, however, so much thicker and more valuable is the rich lining of down—the costly toll which the breeding birds have to pay to the masters of the soil for their temporary residence. After the lapse of a few days, the female sits most assiduously ; in places where she is accustomed to the sight of men she will not stir even should they approach her nest ; she simply bows her head to the ground, and slightly spreads her wings so as to make herself as inconspicuous as possible. The colour of her plumage generally coincides so exactly with that of the surrounding rocks, that to an unpractised eye the bird is with difficulty distinguishable from the ground on which it sits. We have more than once had convincing proof of the efficacy of this mode of concealment, in the shape of a sharp bite on the leg,

inflicted by the beak of a brooding female, of whose presence we were quite unaware before—at the last moment—she flew away. Those females who happen to have taken up their abode in the vicinity of men will allow themselves to be taken up from the nest while their eggs are examined, after which



EIDER DUCKS AT HOME.

they immediately settle down again to brood, without showing the slightest desire to escape. Frequently we have sat close to their nests for hours together, have stroked their feathers, put our hands between their bodies and their eggs to note the temperature, and yet few of them have stirred from the spot. Some of them would occasionally bite our fingers as if in play, but the majority testified neither

timidity nor annoyance. Some we purposely took to a little distance from their nesting-place and placed upon the ground, but they would immediately waddle back to their domicile, arrange the down around the eggs, and quietly resume their position, as if nothing had happened. When left quite to themselves the brooding females quit their nests regularly every morning, taking care, however, to cover their eggs warmly with down, so that they may not be chilled during their absence; having done this, away they fly out to sea, and dive assiduously for half an hour in search of food, and in this short period manage to fill their crops almost to bursting with various kinds of shell-fish, after which they return at once to their charge. The males are much more timid than the females, even when with them at the breeding season or whilst keeping watch over their nests. Should any one approach, they immediately get into a terrible flurry, toss their heads, call loudly to their wives, and after blustering for a little time, fly off to sea, whence they anxiously watch the proceedings of the disturber of their quietude. After the lapse of twenty-five or twenty-six days, the young ones break their shells and make their appearance; they are beautiful little creatures, clad in rich parti-coloured down. From the first moment of their birth they are well able both to swim and to dive; they also walk with considerable facility, even better than their mother, who takes them, before their downy coat has had time to dry, down to the sea. Should the breeding-place be far from the sea, and the departure of the little flock be unusually delayed, the keepers frequently come to their assistance, and, putting the entire brood into a basket, walk with them to the shore, followed by the waddling parents, who seem quite satisfied with the arrangement.

The sea, indeed, is the safest place for these helpless nestlings, as there they can most readily escape from their natural enemies the Falcons, Ravens, and Skuas. Very frequently several mothers, accompanied by their little families, consort together, and then they present to the observer a very attractive spectacle. Should the parent birds perceive that they are followed by a boat, they at once begin to paddle away with all their strength, hoping to escape from their pursuers, and it is not till the boat has come close upon them that they decide upon taking wing; by so doing they are of course compelled to desert the young birds, who, however, seem very well to understand how to provide for their own safety, as they immediately make for the land, and scrambling on to the shore, may be seen running nimbly in search of some convenient hiding-place, dropping down between stones, or concealing themselves behind slight inequalities of the ground, from which they are scarcely distinguishable. Should the threatened danger pass away, they will be found after a little time hastening back to the sea, into which they immediately plunge, and paddle away directly from the shore, until they are joined either by their own mother or by some other elderly female belonging to their flock. Should their mother be killed, the young, if unable to do without assistance, at once join some other family, into which they are received without the slightest reluctance, and tended and cared for by the old birds precisely as if they were their own offspring. The instinct for brooding in the Eider Ducks is indeed very remarkable; they will even steal each other's eggs in order to brood upon them. The nestlings grow rapidly, and often within a week from their birth are well able to procure their own food; they remain, nevertheless, in company with their parents till the early part of the following year. In their earliest infancy they are fed with small crustaceans and other soft-bodied animals; at a later period they live for the most part upon bivalve shell-fish, but likewise feed willingly on fishes, or indeed on any small marine animals that they may meet with. Although the Eider Ducks constitute a considerable portion of the wealth of the countries they inhabit, they are by no means cared for and protected as they might be. Intelligent landholders, whose property the breeding-places are, take the opportunity while the birds are laying to remove some of their eggs, and thus succeed in making them lay a greater number than they otherwise would do. Moreover, they are content to wait patiently until the breeding-time is over before they gather the down from

their nests. More generally, however, neither birds nor eggs are taken the least care of. Notwithstanding that their flesh is not by any means palatable, these Ducks are continually persecuted and slaughtered, and the consequence is, that in Spitzbergen and other localities where the sale of the Eider-down used to be reckoned by the hundredweight, it is now reckoned only by pounds. Malmgren assures us that it is a rare thing to see young birds in the autumn; and the bird-catchers are loud in their complaints of a scarcity, for which they have only their own improvidence to blame. In Greenland the diminution, although not quite so conspicuous, is still very great, not more than a thousand pounds being now collected there annually. "Formerly," says Holboell, "the gross quantity of down procured in South Greenland in the course of a year was 5,007 lbs., and North Greenland produced about half that quantity. According to the usual reckoning a dozen nests yield a pound weight of the raw material, so that every year 104,520 birds were not only despoiled of their down but also robbed of their eggs.

THE TRUE EIDER DUCK, OR ST. CUTHBERT'S DUCK.

The TRUE EIDER DUCK, or ST. CUTHBERT'S DUCK (*Somateria mollissima*), has the cheeks, chin, back, and breast white, the latter with a reddish tinge. Front and sides of the head black; nape, to the throat, pea-green; quills and tail brown, marked on the wings with velvet-black. The eye is reddish brown, the beak greenish yellow, the foot olive-green. The length of this bird is twenty-four inches, the breadth forty; the length of wing eleven inches, and length of tail three inches and a half. The female is smaller than the male, and her plumage rust-red, marked on the head and neck with longitudinal brown streaks, elsewhere with crescent-shaped black spots; her under side with deep brown, slightly lined with black. After the breeding season the plumage of the male loses much of its beautiful glistening appearance, both head and neck become blackish grey, more darkly clouded, the shoulders greyish black, and the region of the crop yellowish white, marked with black and rust-brown upon the borders of the individual feathers. It seems probable that this change of plumage is not produced by moulting, but by a gradual change in the colour of the feathers.

This valuable Duck is met with throughout the northern regions of the globe, its range extending from Jutland to Spitzbergen, and from the west coast of Europe along its northern shores to Greenland and Iceland. It is a constant resident in some of the northern parts of England and Scotland, and has the name of St. Cuthbert's Duck from the numbers that nest in that island. Its most southern breeding-places are upon the Island of Sylt and other small Danish islands in the same latitude, and from thence north it is met with in continually increasing numbers. In Iceland, Greenland, and Norway, it is very abundant, and is preserved with the utmost strictness. Their nests along the coast of Norway, we are told, produce, from the down they yield, on an average, a profit of five pounds a-piece in the year; so that a small barren rock, frequented by these birds, becomes a very valuable property, and has often been the subject of litigation between Norwegian landholders. Some years ago the Eider Fowl were killed in such numbers that their extinction in that country seemed imminent, but in 1847 the Norwegian Parliament passed a law for their relief, and since that time their pursuers have been obliged to confine themselves to robbing the nests; the consequence is that these Ducks are now very plentiful, and from the perfect security in which they live have attained a degree of impudent assurance unsurpassed by the London Sparrows, or their own distant connections on the ornamental waters in our parks. In the town of Tromsøe they come to the house doors to be fed, and walk about as if strongly impressed with the consciousness of their own importance. In the northern parts of Great Britain these birds are seen assembling in groups along the shores of the mainland about April, from whence they cross to the adjacent islands early in May. The nest of this

species, which contains from four to ten (generally six or eight) well-shaped, smooth-shelled eggs, usually of a dusky greyish green, is formed of fine sea-weed, and is lined, after the eggs are deposited, with down from the mother's breast, placed so thickly that the eggs are completely hidden from view. The down from a single nest, when cleansed, although sufficient in bulk to fill a man's hat, seldom



THE EIDER DUCK (*Somateria mollissima*).

weighs more than one ounce. In northern countries the business of robbing the nests of this valuable material begins soon after the eggs are laid, the female replacing it by a fresh supply from her breast, until it is quite bare, when the male bird in turn strips himself to provide a warm covering for his young. "In a month's time," says Mr. Selby, "the little family are led or carried in their parent's bill to the water, where they swim and dive with facility; the mother meanwhile carefully watching over them to defend them from their biped foes, and feigning lameness to lure their pursuers from the spot."

"The care which the mother takes of her young," says Audubon, "cannot be exceeded. She leads

them gently in a close flock in shallow waters, where, by diving, they procure food, and at times, when the young are fatigued and at some distance from the shore, she sinks her body in the water and receives them on her back, where they remain several minutes. At the approach of their merciless enemy, the Black-backed Gull, the mother beats the water with her wings, as if intending to raise the spray around her, and, on her uttering a peculiar sound, the young dive in all directions, while she endeavours to entice the marauder to follow her, by feigning lameness, or she leaps out of the water and attacks her enemy, often so vigorously that, exhausted and disappointed, he is glad to fly off, on which she alights near the rocks, among which she expects to find her brood, and calls them to her side. Now and then I saw two females which had formed an attachment for each other, as if for the purpose of more effectually contributing to the safety of their young, and it was very seldom that I saw these prudent mothers assailed by the Gulls."

We must not omit to mention that the eagerness of these birds for brooding is so great, that, when robbed of their eggs, they have frequently been known to steal the eggs or even the young of others of their species. In its natural state the Eider Duck subsists upon small fish, molluscs, crustaceans, and fish spawn, but when kept confined will eat grain. The flight of this species, which is steady and rapid, is usually carried on near the surface of the water ; it dives with facility, and is capable of remaining submerged for a considerable time.

THE KING EIDER.

The KING EIDER (*Somateria spectabilis*) has the bill, the sides of which are elevated, arched and ridged, surrounded by a fine black band ; a similar band runs from the base of the under mandible down each side of the neck. The upper head is grey, the cheeks are sea-green, the neck, back, and sides of the rump white, the front of the breast is light flesh-red ; the scapulars, lower part of back, wings, tail, and belly, are white, and the rest of the feathers black ; tertials, as in the preceding species, deflected. The eye is brown, beak red, and foot reddish. The female is distinguishable from that of the True Eider by her light reddish brown plumage, and by the structure of the base of the bill.

General Sabine states (in the Appendix to Sir E. Parry's first Voyage) that these birds were abundant in the North Georgian Islands, their nests being placed on the ground in the neighbourhood of fresh-water ponds, and their food consisting of the aquatic vegetation. Sir J. C. Ross says, "Vast numbers of this beautiful Duck resort annually to the shores and islands of the Arctic Regions in the breeding season, and have on many occasions afforded a valuable and salutary supply of fresh provision to the crews of the vessels employed on those seas. On our late voyages comparatively few were obtained, although seen in very great numbers. They do not retire far to the south in the winter, but assemble in large flocks, the males by themselves, and the females with their young brood are often met with in the Atlantic Ocean, far distant from any land, where the numerous crustaceans and other marine animals afford them abundance of food."

This species, which very rarely occurs in Great Britain, was found, on one occasion, according to Dr. Latham, about June, at Papa Westra, one of the Orkney Islands. The eggs, six in number, rather smaller than those of the True Eider Duck, were embedded in down, and placed on a rock overhanging the sea. Nuttall states that the eggs of this bird are whitish, while Yarrell describes them as pale green, and Audubon as of a uniform dull greenish hue. Latham tells us that in Greenland, where the King Ducks are common, the natives assemble in canoes, and by their shouts terrify the birds, which dive to avoid them ; but as the place where they are about to emerge is betrayed by the bubbling of the water, their pursuers follow them, and the same game being several times repeated, the birds are at length tired out and easily secured.

The WESTERN or STELLER'S EIDER DUCK (*Somateria* or *Heniconetta Stelleri*) is a smaller species, still more beautifully coloured and marked. In the male the head, nape, and sides of neck are white, a spot on the forehead, and a transverse band at the back of the head are green, a circle round the eye, the fore and hinder neck, the rump, tail, and points of the quills are black. The upper wing-covers and shoulders are white, striped with dark blue. The under side, as far as the blackish brown centre of the belly, is yellowish brown. In the plumage of the female reddish brown predominates. The eye is brown, the beak grey, and the foot greenish grey. The Western Eider Duck was first described by Steller, from specimens which he obtained in Kamschatka, where it builds on inaccessible rocks. But few specimens of this rare Duck have been shot in England. This species is exclusively a sea bird, is never seen entering the estuaries of rivers, and breeds among rocks and precipices. It flies in large flocks.

The SCOTERS (*Oidemia*) are birds of considerable size, with remarkably dark plumage. Their beak is moderately long, broad, irregularly swollen at its junction with the forehead, and bright coloured. The tarsi are short, the toes long and large, and the wings of medium length; the tail, which is wedge-shaped, consists of fourteen feathers; the soft and velvety plumage only exhibits colour on the head and wings. All the species belonging to this group are inhabitants of high latitudes, and breed within the Arctic Circle.

THE VELVET SCOTER.

The VELVET SCOTER (*Oidemia fusca*), one of the species most common in Great Britain, is coal-black, with the exception of a spot beneath the eye, and another on the wing, which are white; the beak is bright yellowish red, marked with black at the edges and at its base; the feet are pale flesh-red, varied with black at the joints; the eye is pearl-white. The female is dark brown, with the exception of a white spot in the region of the ear, a white patch upon the wing, a yellowish bridle-streak, and a grey place upon the centre of the breast. Her eye is brown, her beak black, and her foot greenish yellow. The length of this species is twenty-four inches; the breadth forty inches; the length of the wing twelve inches, and that of the tail three inches and a half. The range of the Velvet Scoter extends from the northern parts of Scandinavia eastward as far as America. In the north of Russia and Siberia it is common. During its excursions it not only visits our shores, but goes still further southwards, and has occasionally been seen even upon the coasts of Spain and in Greece, but rarely shows itself inland. It makes its appearance in our latitudes late in the year, generally about the middle of November or the beginning of December, and returns to its northern home early in the spring. In the neighbourhood of the Gulf Stream, where the sea remains open, it may be met with throughout the winter, frequenting the fjords and bays, sometimes in numerous flocks, at others only in small parties, and seldom visits the shores.

The Velvet Scoter walks and flies badly, but swims well and dives admirably. Naumann states that it is less shy than the generality of its race, a statement which we cannot subscribe to; in Norway, at least, we have always observed it to be one of the most timid and circumspect of diving birds. The food of these Ducks consists principally of bivalve shell-fish; in their breeding-places they may likewise procure insects, worms, and probably small fishes; but it is upon the bivalve molluscs that they chiefly feed, and to obtain these they will even leave their brooding-ground and fly out to sea. They have also been observed to feed upon vegetable substances.

Upon the mountain lakes of Southern Norway the Velvet Scoters breed with tolerable regularity; and further to the north there is hardly a sheet of water of this description, if not too remote from the sea, upon which their young are not to be found. About the middle of June their rudely-constructed nests may be met with hidden in bushes or high grass, or amid tufts of rushes. The

nest itself is constructed of coarse sticks, stalks, and leaves, loosely heaped together, and lined with down plucked from the body of the female. The eight or ten eggs constituting a brood are elongated, smooth, and shining, and of a reddish yellow colour. The young remain in their native lakes until fully able to fly, and do not betake themselves to the sea till the end of October.

The FEN DUCKS (*Aythya*) are handsome, strongly-built birds, with moderately long beaks, which are not dilated at the base; short, broad-soled feet; moderately long, pointed wings, and smooth plumage.

The range of the members of this group extends from the Arctic Circle to the tropics. They do not inhabit very high latitudes, and only visit the south during their migrations. They may, therefore, be considered as properly belonging to the temperate zone. During the winter months they are to be met with in Southern Russia and the low countries bordering on the Danube, also in Greece, South Italy, Spain, and throughout the north of Africa. These birds make their migrations by night, great numbers of them flying together in large flocks, generally without any regular order, but sometimes arranged in converging oblique lines. In the spring they are usually seen in pairs or in small parties. During the summer they visit lakes of fresh water, large ponds, morasses, or fens having a considerable surface of water of sufficient depth, sometimes resorting to smaller ponds which may happen to be in the neighbourhood. As regards their locomotive powers, these Ducks are decidedly the best endowed of their family—they can walk tolerably well, but, being very unwieldy, they do not willingly come upon dry land, and then only to repose upon some sandbank, or beat up any masses of reeds that may be lying on the margin of the pond. When swimming their body is not so deeply immersed as is that of some of their congeners; they cut through the waves, however, with the same rapidity, and dive as quickly as any of their neighbours. Their flight is hasty and performed by frequent strokes of their wings, that make a perceptible rushing sound, but do not propel them very quickly through the air; nevertheless, they do not seem to become fatigued so quickly as might be expected.

During the summer time the Fen Ducks live almost entirely on vegetable substances; bulbous roots, buds, and tender shoots of trees, succulent leaves, blossoms and seeds of water-plants, constitute the staple of their diet; they will, however, likewise catch aquatic insects, fishes, and pond mollusca; in fact, they seem to like variety. During their migrations they appear more partial to animal food, and when they indulge in this to any extent, their flesh, at other times excellent food, acquires a somewhat disagreeable flavour.

Their breeding-time begins late in the season, generally about the middle of May, when they usually construct their nests among the sedges and reeds that grow upon the margins of the marsh or pond which they may have selected for their residence. Whether this be fresh water or salt seems to be to them a matter of no consequence. Sometimes they will build in situations frequented by man, sometimes by the side of very small ponds, but in the latter case they soon remove their young ones to a more roomy locality. After their first arrival they spend a long time in the society of other species of Ducks, apparently without ever thinking of the great object of their visit. Towards the end of April they become restless and lively, and the males begin to utter their amorous call, the flock separates into pairs, which at once set to work in earnest to construct their nests. There does not seem to be any fighting amongst the males; the females quietly select their mates, and the espoused couple immediately resort to their building ground. The nest is usually a mere pile of sedges, stalks of reeds, hay, straw, and leaves, slightly hollowed at the top, and warmly lined with feathers. The eggs, eight or ten in number, sometimes in exceptional cases more, sometimes fewer, are moderately large, roundish, and of a dull grey or olive-green. So long as the female continues to

lay, her mate remains true to his duty, and carefully watches over her safety. When, however, she begins to sit upon her eggs, the male deserts his charge, leaves her while he amuses himself in the society of other roving males, and finally troubles himself no more about either mother or eggs. After the lapse of twenty-two or twenty-three days, the young ones make their appearance, and on the very day of their birth are to be seen paddling about upon the surface of the water, but at first they do not venture beyond the shelter of the floating herbage at the side of the pond. Soon, however, their parent, by the pressure of her body, crushes down the reeds and water-plants, so as to make a sort of bed, to be used as a sleeping or resting place, and here she may be found sitting, closely surrounded by her little flock, as they sun themselves and preen their feathers. If disturbed in their snug retreat, they endeavour to save themselves by repeatedly diving, and if the threatened danger continues, the mother hastens to lead them to a more secluded spot, always, if possible, making their way thither by water, never, except in cases of urgent necessity, trusting to the dry land. The size of the young Ducks rapidly increases, and they do not learn to fly until they have attained their full growth. Owing to the excellence of their flesh, the chase after these birds is eagerly followed up, and the sportsman is able sometimes to bring down several of them at once, seeing that, if pursued, the young birds always crowd closely together. Occasionally they are taken in considerable numbers by means of decoys.

THE RED-HEADED DUCK, DUNBIRD, OR POCHARD.

The RED-HEADED DUCK, DUNBIRD, OR POCHARD (*Aythya ferina*), one of the best-known representatives of the above group, is of a beautiful brownish red upon the head and fore part of the neck, the front of the breast is black, the back and sides are pure ash-grey, delicately marked with cross lines of black. The under side is greyish white, the region of the vent black; the wing-covers are ash-grey, the wing-spots light grey, and the quills and tail grey. The eye is yellow, the beak black at its base, and the margins elsewhere blueish grey; the foot is greenish grey. In the female the head and neck are reddish greyish brown, marked with an indistinct crescent of dark brown. Her body is whitish grey, and wings ash-grey. The young males in their summer dress resemble the females, but are somewhat brighter in hue, and have the back-feathers of a purer grey. The length of this bird is nineteen inches, its breadth thirty inches, the wing measures nine inches and a half, and the tail two inches and a half.

The Red-headed Ducks are winter visitors to Great Britain, appearing in October, and, as a rule, departing in spring. Occasionally a few have been said to remain and breed in Norfolk. These birds do not confine themselves to the sea-coast, but visit inland lakes and rivers. Their note is usually a low whistle, but, when alarmed, they utter a hoarse croak. The nest, which is placed among rushes or coarse herbage, contains from ten to twelve buffish-white eggs; they are about two inches long, and one inch and five-eighths broad. "Although," says Audubon (in speaking of this species, which is numerous met with during winter about New Orleans, East Florida, and Chesapeake Bay), "these Ducks dive much and to a great depth, while in our bays and estuaries, yet when in the shallow ponds of the interior, they are seen dabbling in the mud along the shores, much in the manner of the Mallard; and, on occasionally shooting them there, I have found their stomach crammed with young tadpoles and small water lizards, as well as with blades of grass; nay, on several occasions I have found pretty large acorns and beech-nuts in their throats, as well as snails, entire or broken, and fragments of the shells of several small unios, together with much gravel."

Pochards are sold in large numbers in the London markets, and Gould tells us, on reliable authority, that no less than 14,400, the sale of which produced £1,200, have been captured in one decoy.

The method by which Pochards were formerly taken is thus described by Montagu:—"Poles were erected at the avenues leading to the decoys, and after a great number of birds had collected for some time on the pond, a net was, at a given time, erected by pulleys to these poles, beneath which a deep pit had been previously dug; and as these Ducks, like the Woodcocks, go to feed just as it is dark, and are said always to rise against the wind, a whole flock was sometimes taken together in this manner; for if once they strike against the net, they never attempt to return, but flutter down the net till they are received into the pit, from which they cannot rise."

The PIN-TAILED DUCKS (*Erismatura*) are recognisable by the structure of their tail; their body is elongated; neck short and thick; and head tolerably large. Their beak, which is flat in front, and considerably enlarged towards its base, is furnished at its tip with a small nail; the tarsi are short; toes long; and the wings remarkably small and much vaulted. The long, wedge-shaped tail is formed of eighteen feathers, which are of hard strong texture, and very tapering towards their extremities. The close harsh plumage of this group is readily distinguishable by the peculiarity of its colouring from that of all other Ducks.

THE WHITE-HEADED PIN-TAILED DUCK.

The WHITE-HEADED PIN-TAILED DUCK (*Erismatura leucocephala*) has the head white, with the exception of a large black patch upon the centre; a band around the neck and throat is black. The lower neck and region of the crop are chestnut-brown, finely marked with black; the mantle is greyish yellow, streaked with black; the under side reddish yellow, with greyish white centre and black markings; the primary quills are grey, and the tail black. The eye is reddish yellow; beak blueish grey; and foot reddish grey. This species is nineteen inches long and twenty-five inches broad; length of wing six inches and a half, and of tail four inches and a half. The female is smaller than her mate, and more variegated, but is not so handsome, owing to the absence of the white feathers and black spot that adorn the head of the male; the upper part of her head and a spot upon the cheeks are brown, the latter encircled by a line of yellowish white; the rest of her plumage is principally reddish brown, marked with watered black and grey lines. The White-headed Pin-tail is met with throughout the south and south-east parts of Europe, the south parts of Southern Asia, and North-west Africa; it is, however, scarcer than the generality of Ducks, even in localities where it is most frequently observed. It is principally abundant on the lakes of Asia, whilst in countries more to the west it seems less common. In Greece it is a regular visitant, but has not yet been found in Spain. Buvry and Tristram encountered it upon the lakes of Algeria, and the first-mentioned naturalist succeeded in obtaining its eggs. "The White-headed Ducks," says Buvry, "are most elegant birds, and are always met with in pairs. Their beautiful light blue beak forms a lively contrast to their white head and brown body. Their attitude when swimming is very striking; they lift up their tail almost perpendicularly, and glide lightly and quickly over the water like so many little boats. If pursued they seldom have recourse to their wings; nevertheless, such is the rapidity of their movements in the water that they are rarely captured." They lie so deep when swimming that, with the exception of their head, neck, and tail, very little of them is seen; and if they choose to exert themselves when paddling with their powerful and broadly-webbed feet, they swim and dive with all the facility of a Cormorant. In their flight they rather resemble Divers than ordinary Ducks, and the rapid motion of their wings produces a very audible whirring sound. Their voice, which is a somewhat jarring quack, reminds us of that of the Duck. The food of these birds consists of molluscs and fishes. In Central Asia their breeding-time occurs later than that of any of their kindred, their eggs being never met with before July. The nest is difficult to find, as it is carefully hidden in the thickest entanglements

of the reeds, rushes, and bushes, that abound in their favourite resorts ; occasionally it is still further concealed by a covering of similar materials. The nests found by Tristram in Algeria contained—the one three and the other eight eggs. “These,” he says, “are very large in proportion to the size of the bird, of a regular elliptical shape, very rough shelled, and, unlike those of other Ducks, of a dingy white.” We have no information respecting the rearing of the young.

The MERGANSERS, or GOOSANDERS (*Mergi*), are distinguishable by their very elongate body, moderately long, thin neck, and large head, which is generally ornamented by a tuft or hood ; their bill is long, straight, or slightly arched, slender, and almost cylindrical ; its callous margins are sharp and strongly denticulated, and its tip terminated by a strong hook ; the legs are short, and placed very far backwards, the feet large, and toes long ; the hind toe is furnished with a supplementary web, resembling that of some of the Divers. The wings are of moderate length, and very acutely pointed, the first and second quills being the longest ; the tail, which consists of sixteen or eighteen feathers, is short, broad, and rounded ; the plumage is short, thick, and prettily coloured, but the colours vary at different ages, and also in the sexes as well as at different seasons of the year. These remarkable birds walk badly, with a vacillating waddling gait, keeping their bodies erect, but they are excellent swimmers, and dive with wonderful facility. Their flight is rapid, light, and somewhat resembles that of the Duck. When Mergansers fly in company, as they frequently do, they range themselves in a certain regular order ; they rise readily, but with a loud noise, splashing with their feet upon the water, and when they alight again in that element, fly obliquely downwards, and either at once dive or stop themselves by means of their outstretched tail. All the members of this family belong to the northern regions of our globe, but are met with pretty equally both in the eastern and western hemispheres. When driven south by the intensity of the cold, their migrations sometimes extend to the south of Europe, and to corresponding latitudes in Central Asia and America. The Goosanders subsist chiefly upon fishes, crustaceans, worms, and insects ; the fishes they obtain by diving, and chasing them through the water, exactly after the manner of the true Divers. These birds are strictly monogamous, and construct their nests sometimes upon the ground, in clumps of herbage, among reeds, in hollow trunks, or amongst the branches of trees, and occasionally in the deserted homes of other birds. The nest is inartistically formed of dried stalks, leaves, moss, and rushes, warmly lined with down. The brood consists of from seven to fourteen unspotted grey or greenish white eggs. The female alone broods, sitting for a period of from twenty-two to twenty-four days, the male always taking up a position in the neighbourhood of his mate. At first he seems to take some interest in his young brood, but soon forsakes them, and joining company with others of his own sex, retires from his family cares in order to undergo his autumnal moult. The flesh of the Goosanders is disagreeable, and of an oily taste, but they are often killed for the sake of their down and feathers. The eggs are in much request.

THE WHITE-HEADED GOOSANDER.

The WHITE-HEADED GOOSANDER (*Mergellus albellus*) has been made the representative of a distinct sub-family, probably on account of the shortness and breadth of its bill, and the peculiarities in its mode of life. This bird bears a great resemblance to some of the Divers, and therefore must be placed near them.

The summer dress of the male is pure white, a spot between the eyes, the beak, and a band across the nape are blackish green ; the back and a portion of the wings, two small stripes upon the shoulder, and a long stripe above the wing are black ; the sides are blueish grey, cross-waved with black ; the primary quills blackish brown, and the tail-feathers grey ; the eye is blueish grey, the beak

and foot greyish blue. The length is nineteen inches, the breadth thirty inches ; the length of wing eight inches and a half, and the length of tail three inches. In the female, which is smaller than her mate, the head and hinder neck are brown, the bridles black, the throat and under part of the body white, the feathers of the mantle grey, the upper breast and sides whitish, transversely waved with black. After the summer moult the dress of the male very much resembles that of the female. The real habitat of the White-headed or Dwarf Goosander, as it is sometimes called, seems to be in Northern Asia, from whence it extends westward into Northern Europe, and eastwardly into the northern parts of America. During the winter months, however, it wanders far southward. It is then to be met with in considerable numbers throughout the whole of China, being more especially abundant in the northern provinces of the Celestial Empire. It is, moreover, a regular visitant to Northern India, and is not unfrequently seen in Central and in Southern Europe. It seems to be more scarce in the Southern Provinces of the United States of North America, for Audubon informs us that in the western division, at least, it was a bird of unusual occurrence. In very hard winters it makes its appearance in Germany, as early as the month of November, but more usually not until the middle of December, returning again to the north in February or March. It is likewise a winter visitor to the shores of Great Britain, large numbers being sometimes seen on the eastern or southern coasts of England. It is rarely found north of the Humber, and is comparatively rare in Scotland and Ireland. In some parts of Switzerland it may be met with even so late as the beginning of May. This species is generally only to be found in the neighbourhood of fresh-water lakes, sometimes, but only casually, it may be seen in quiet bays upon the sea-coast, more especially in such as are at the mouths of rivers. Unlike the Divers, it seems to prefer flowing streams to stagnant water, and often wanders along the course of rivers, from which it only makes excursions to such lakes and ponds as may be free from ice. When walking, the Dwarf Goosander holds its body in a horizontal position, with its head retracted ; it walks with a waddling gait, but better than the generality of its near allies. When swimming it keeps itself about half submerged, and when it dives it stretches itself out to its full length, and disappears in an instant. Its flight, which very much resembles that of the smaller Ducks, is rapid, straight, accompanied by a slight whirring of the wings, and is generally but little elevated above the surface of the ground or of the water. It is remarkably lively in its disposition, and even during the bitterest cold weather is sprightly and active.

These birds may generally be recognised by the manner of their diving ; the True Divers, after their plunge, generally reappear close to the spot where they went down, but the Goosanders swim while under water to a considerable distance, shooting along like a pike or a trout, and as they can keep submerged for a minute at a time, it is not easy to calculate where they will come up again. They live principally upon small fishes, crustaceans, and aquatic insects, and in confinement, at least, do not refuse vegetables ; they will also eat bread greedily. In catching fishes they are quite as skilful as the larger Divers, and it is very interesting to watch a flock of them thus employed. Now you see them swimming altogether ; in a moment they all vanish at once, and the water becomes disturbed by their movements underneath ; at length they come up again one after another, but widely separated, and often from thirty to fifty yards from the place where they went down. Again they congregate, and anon they dive again ; some of them coming up perhaps close to the shore. Sometimes they are obliged to procure their food through small holes in the ice, often not a foot square, and to pursue their game beneath the frozen surface, only presenting themselves every now and then at the aperture for a supply of air. Their power of seeing under the water must therefore be very good, or they would never be able to find the broken place at which to emerge. Where the supply of food is scanty they will rake up the bottoms of ponds, in search of frogs or insects. The habit of diving all at once is peculiar to the Goosanders, and the explanation of this manœuvre

seems to be that by so doing they come among the astonished fishes in all directions, thus enabling one bird to catch those that are trying to escape from another ; but we have never seen them, as some writers assert, arrange themselves in the form of a crescent, so as to drive the fishes, as it were, into a narrow space. About the breeding of these birds we are very imperfectly informed ; we know, however, that in the north of Russia they assemble in great numbers, and build their nests upon the shore, or upon small islands, sometimes in hollow trees. We know, likewise, that their nest is composed of dry broom (*Genista*) and grasses, lined with feathers, and that their eggs, eight to twelve in number, are of a dirty white, or greenish brown colour, but we are ignorant either of the duration of their incubation, or of the manner in which they educate their progeny.

THE GREEN-HEADED GOOSANDER.

The GREEN-HEADED GOOSANDER (*Mergus merganser*) differs from the preceding species not only in its greater size, but in the structure of its bill, which is elongated and compressed at its sides. In his summer dress the male is blackish green upon the head and upper neck ; the upper back, shoulders, and margins of the wings are black ; the whole under surface and the upper wing-covers are of a beautiful yellowish red ; the wing-spot is white. The wing-quills are black, the lower tail-covers grey, finely marked with black, and the tail-feathers grey. The eye is reddish yellow, beak coral-red, and foot pale red. The female has the upper head and nape brown, the back-feathers blueish grey, the under surface of her body and the wing-spot white ; the fore parts of her breast and sides are grey, marked with a darker and a lighter shade. After the summer moult the plumage of the male is very similar to that of the female, but somewhat more beautiful. The length of this species is from thirty to thirty-two inches ; breadth, forty to forty-two inches ; length of wing, twelve inches ; length of tail, three inches.

The Green-headed Goosander inhabits the northern parts of Europe, Asia, and America, being pretty equally distributed in all these continents : its migrations, which occur with much greater regularity than those of the *Mergellus albellus*, extend, on the one hand, to all the southern countries of Europe, the south of China, and north of India ; and on the other, to the extreme south provinces of the United States. A few pairs are occasionally known to breed in the Orkneys and Hebrides, but with us by far the greater number only arrive from the north about the end of November, and return thither in February. The Green-headed Goosander may justly be regarded as one of the most beautiful of aquatic birds. With the exception of a few hours at noon, he is invariably to be seen in the water. Upon dry land his gait is waddling, and his flight, although rapid, laboured and heavy ; but upon the sea he is quite at home. When swimming quietly upon the surface he rows himself along with powerful but slowly-repeated strokes of his broad feet, passing through the water with tolerable velocity. Should he, however, cast an envious eye upon some other bird that has caught and is about to swallow a fish he would fain appropriate, he rushes in pursuit with truly wonderful rapidity. In diving he is equally adroit, plunging suddenly down without the least sound or commotion, and in clear water, where his career, as he steers his course half way between the surface and the bottom can be observed, his rapid progress seems rather to resemble the movements of a trout than those of a bird. On occasions he can remain under water for two minutes at a time ; generally, however, he comes up in about a minute, and in this short period, notwithstanding all the ins and outs of his zigzag course, will have dived, as shown by the place of his reappearance, upwards of 100 yards. As long as these birds can obtain a sufficient supply, they subsist exclusively upon fishes, preferring such as are about five or six inches long, although they are well able to vanquish and swallow those of much larger size. The breeding-place of these Goosanders is generally in latitudes very far north, their usual resort being to the Danish islands, and even still farther north.

Their period of incubation commences about the beginning of June. The nest is constructed in various situations, often in some excavation in the ground, hidden between stones or bushes, on the tops of pollard willows, on the lofty eyries of birds of prey, in the deserted nests of Crows, or within the cavities of hollow trees. At Jana-Elf we saw large chests, resembling dove-cots, upon all the tallest trees; these we were told were intended specially to induce the Goosanders to build their nests, and lay their eggs in them. These breeding-boxes are likewise in common use among the Lapps and Finns, and, as we learned, were regularly visited by the breeding birds.

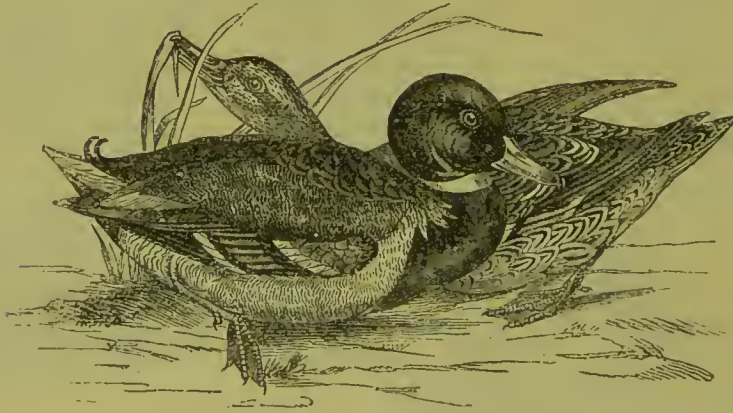
The nest itself is more or less artistically constructed of twigs, stalks, straw-grass, leaves, and similar materials, always well and warmly lined with down. The brood consists of from eight to



THE GREEN-HEADED GOOSANDER (*Mergus merganser*).

fourteen eggs, but by regularly abstracting them as they are laid, the female will sometimes produce double those numbers. The eggs are well-shaped, rather elongate, slightly shining, and of a delicate greenish brown, grey, or dirty olive-green colour. Only the female sits, and upon her the guardianship of the young brood almost entirely devolves. Such as are born in nests placed at a considerable height, must necessarily be brought by her to the surface of the ground, but we are not aware that any naturalist has witnessed such a proceeding. It is just possible that, like some Ducks and Geese, they may leap from the nest trusting to their fluttering wings and thick downy covering to come off scatheless. Were we to judge by the observations we have had opportunities of making relative to the breeding of the Red-breasted Merganser (*Mergus serrator*), we should say that the young brood at first comport themselves exactly like young Ducks; soon, however, their natural peculiarities and special endowments begin to show themselves, and after the lapse of about eight days, they adopt the habits of their race. When first hatched they live upon small crustaceans and larvæ, caught upon the surface of the water, but on the third day are able to dive, and from the eighth day are quite

capable of fishing for themselves. They grow very rapidly, and soon become independent. According to Naumann the instinct for brooding is so strong in these birds, that if robbed of their eggs, they will take possession of the nest of a Duck, and after forcibly driving away its owner, will sit upon her eggs till they are hatched.



THE SEA-FLIERS (*Longipennes*).

IN the broad-billed water birds, we have had an opportunity of admiring the manner in which their power of swimming becomes more and more complete. In the Sea-fliers we shall recognise the tyrants of the ocean, seeing that in their presence the swimming birds, whether inhabitants of the coast or children of the wave are subservient. The great character whereby the *Longipennes* are distinguished is the enormous development of their wings, while that of their feet remains comparatively in abeyance. Some of them, it is true, are well able both to swim and to walk, but their special adaptation is for flight. Their power of flying is supreme, and in this they are surpassed by no other birds. As to their general structure, there is a great similarity between the different races. Their body is powerful, their neck short, and their head of moderate size. Their beak, which is of medium length, is compressed at the sides and sharp-pointed or hooked at the end; in conformity with this structure, the upper mandible is more or less arched, while the under jaw at a little distance from its apex, is strengthened by an angular enlargement. Their feet are feeble in proportion to the size of their bodies, and only webbed upon the three anterior toes; moreover, even upon these the webs are often very imperfectly developed. The wings are always long, and sharp-pointed, more or less narrow and proportionately very large; their tail is of moderate dimensions, either truncate, greatly rounded, pointed, or forked at the extremity, and usually composed of twelve feathers. The general plumage is very thick and rich, but not particularly well-furnished with down; its colour is much varied, and changes with the age of the bird and at different seasons. In all the above characters and in many others that might be adduced from an examination of their internal structure, these birds differ from the Swimmers in so many particulars that they cannot be considered as in any way belonging to the same order.

The domain of the Sea-fliers is the ocean, their territory the wide world. Some families seem more especially to frequent coasts, others prefer fresh water to the salt sea, but these are mere exceptions. Sweeping continually over the waves, or skimming in the proximity of coasts, they wander over the sea and circle round the globe. By one tie only are they bound to the dry land, and that is, their affection for their offspring. They lay their eggs upon the land, and there watch over their young brood until their wings attain sufficient strength to enable them to join their brethren in the air; the rest of their time is for the most part devoted to the sea, upon which they sometimes repose, or, in exceptional cases, sleep upon the shore. Their flight is longer sustained than that of the Swallows or Swifts, or even of the Humming-birds, for they fly not only during the whole day but often likewise throughout the night. It is to this untiring energy and constant restlessness that we must attribute the boundless range over which particular species spread themselves. Some of them indeed have literally a world-wide distribution, and visit every climate between the equator and the polar seas. Others again, restrict their wanderings, or migrations, or flights, or whatever the reader may choose to call them, either within more or less definite regions, or within certain degrees of latitude; it must, however, be kept in mind that these boundaries are not coasts or countries, but whole continents and oceans.

All Sea-fliers are divers, but, owing to the thickness of their plumage, some are less capable than others of plunging far beneath the surface. They generally fly over the waves at a certain altitude, disporting themselves in the sunshine should the weather be fine, or battling with the elements during

a storm. While flying, their attention is anxiously bent upon the sea beneath, on the look-out for food, upon which, when discovered, they instantly dart down, some of them with the straightness and rapidity of an arrow, others more leisurely, while some, before they seize their prey, settle down and swim. All are equally rapacious, whether they catch food for themselves or rob other birds of their hard-earned booty, whether they devour living victims or content themselves with feeding, like the Vultures, upon carrion. Whatever the sea presents for their acceptance they greedily swallow. In their mode of breeding these birds very much resemble each other. Their nests are generally placed upon the ground, sometimes in wild mosses and swamps, sometimes on ledges or projections of rocks, and in the holes and excavations of the soil. Occasionally they select precipitous cliffs and mountains, more rarely trees; some lay but one egg, others two, three, or four. All show much attention to their mates and offspring. The young are at once introduced to their future element, where they soon learn to catch their own food.

The TERNS, or SEA SWALLOWS (*Sternæ*), are a race of middle-sized or small slenderly-built birds. Their beak is of about the same length as the head, hard, straight, or gently arched towards the tip, both in the upper and lower mandible. The feet are feeble, and provided with toes united by a short or deeply-excavated web, and furnished with slightly-curved sharp claws. The wings are long, narrow, and sharp-pointed, the first quill being the longest; the tail, which is of medium length, consists of twelve feathers, and is more or less forked. The thick, soft, close plumage is coloured light blue, black, and white, and varies but little either with the sexes, age, or season of the year. The Terns are very extensively distributed, inhabiting every zone; still they appear to prefer warm and temperate climates to the colder regions, only visiting the latter, indeed, for a short time during the year. The members of this group live both upon the sea and fresh water, and during their wanderings follow the windings of coasts and the courses of rivers; some species prefer flat, bare shores, others resort to localities rich in vegetation, while others, again, delight in the neighbourhood of woods. All are exceedingly active, and from sunset to sunrise are constantly on the wing; their nights are passed on dry land, but they apparently require less repose than any of their kindred. They walk badly, and when on the ground hold their body in a horizontal position, slightly depressed in front, so that the tips of their long sabre-like wings are higher than their head, which is kept in a retracted position. In the water they swim like corks, their little feet being almost incapable of assisting them in that element; on the other hand, their powers of flight are wonderful, and will bear comparison in every respect with those of the Swallow. When not in haste they move their wings with slow wide-spreading strokes, and thus glide onwards through the air in a gently undulating line; but if urged to speed they beat the wind with powerful rapid jerks, and skim along with indescribable velocity. In fine weather they disport themselves almost after the manner of Swallows, sweeping round and round in broad circles, and performing a variety of elegant curves and graceful evolutions; but in a storm their energies seem roused to the utmost, and they may then be seen battling untiringly against the gale. Generally they fly very low over the surface of the water, rising and sinking as the waves heave and fall, till suddenly, with close-shut wings, they dart obliquely into the sea, sinking so deep that they almost disappear, but, immediately rising again, they shake their wings and recommence their devious course over the billows. In this manner they fly over a vast extent of water during the day, but however widely they may wander, return again and again to the same track, and never remove far from the locality whence they started. The disagreeable shrieking cry uttered by these birds varies but little in different species. Although the Terns are very sociable in their intercourse with their own kind, they appear to take but little heed of the rest of their feathered companions, even when, as is often the case, they associate with them in search of food. The diet of the Sea Swallows consists principally of fishes and a

variety of creatures met with in the sea, their prey being always taken when on the wing. These birds are strictly monogamous : a few weeks before the commencement of the breeding season they begin to assemble in the vicinity of their meeting-place, returning year after year to the same locality. Such species as inhabit the sea-shore generally select coral-banks, islands, or long spits of bare sand for this purpose, while such as settle inland seek out similar, but less barren spots, in the vicinity of swamps and marshes, the various species usually breeding apart from each other. Such as resort to morasses lay their eggs in a mere depression of the ground. Their unpretending apologies for a nest are sometimes isolated, sometimes so crowded together as literally to cover the ground so thickly, that the



THE CASPIAN TERN (*Sylochelidon Caspia*).

brooding birds have all to sit with their heads in one direction, and a man cannot pass between them without crushing the eggs of contiguous nests. Even such species as resort to trees construct nothing in the shape of a nest, but deposit their eggs in chinks of the bark or inequalities of the branches. Most of the Terns lay three eggs, others two, whilst those that breed on trees deposit but one. The male and female brood alternately ; during the heat of the day, however, they leave their eggs to be kept warm by the sun. The young are hatched in about a fortnight or three weeks, and make their appearance clad in down ; they leave the hollow that has served as a nest on the day of their birth, and run at once down to the water's edge, quite as fast as their parents, by whom they are anxiously and carefully tended.

The RAPACIOUS TERNS (*Sylochelidon*) are the largest of the Sea Swallows, and distinguishable

from other species by their proportionately strong, compressed body, as also by their large strong beak, which is longer than the head. The foot is small, and the web but little excised; their wing is long and sabre-like; the tail but slightly forked; and the general plumage close and thick.

THE CASPIAN TERN.

The CASPIAN TERN (*Sylochelidon Caspia*) is twenty inches long, and fifty across the spread of its wings; the wing measures sixteen, and tail six inches; the feathers upon the top of the head are black, those on the sides of neck, upper back, and under surface of body, pure white; the mantle is light greyish blue; the tips of the wing-quills are darker and those of the tail-feathers lighter than the general colour of the upper parts of the plumage. The eye is brown, the beak coral-red, and the foot black. In winter the top of the head is black and white; in young birds the feathers of the back are transversely spotted with brown. The Caspian Tern inhabits Central Asia and Southern Europe; it breeds, however, exceptionally in the Island of Sylt, as well as upon some parts of the Dutch and French coasts. During the winter it appears upon the southern shores of the Mediterranean and the lower lakes of Egypt, as also in the northern parts of the Red Sea and Indian Ocean; it occurs on the west coast of Africa, but does not seem to have crossed the Atlantic. In England several specimens have been shot in Norfolk and other parts of the east coast. On the Island of Sylt it arrives towards the latter part of April, and after rearing its young, departs in August. This bird may generally be seen flying at a height of forty or fifty feet, its head, with its shining red beak, being directed downwards, and its great wings slowly waving, until from time to time it plunges headlong into the water after its prey. When in search of a resting-place it betakes itself with its companions to some rocky locality near the shore, where they all perch in a close rank, with their heads turned towards the sea, in which position they are readily mistaken for Sea Gulls. The term *rapacious* has been well applied to the members of this group. Fishes form their ordinary food, but they likewise devour coast and water birds, swallowing them with great ease and relish. In India they hunt eagerly after crabs, and everywhere voraciously feed upon the eggs of other birds whenever they can obtain them. Schilling tells us he has seen them fly to the breeding-places of Sea-fowl, and although at once attacked by the brooding parents, make their way to the nests quite regardless of the clamour, and help themselves without stint. Naumann and he visited a celebrated colony of this species at the northern extremity of the Island of Sylt, where they found their eggs laid upon the bare sand in little hollows, at a short distance from the water, the different broods not being more than two feet apart from each other. The eggs in shape and size much resembled those of tame Ducks. Their shells are smooth, but not shining, and their ground colour a dirty brownish white, marked with ash-grey and black; considerable difference, however, was observable even in those in the same nest. These birds begin to lay about the beginning of May; in Sylt the inhabitants regularly take the eggs, only allowing them to begin to brood eight or ten days before Midsummer. Should a man approach their nests, both male and female endeavour to defend it, and raise a terrible outcry. The young are clothed in down, of a greyish black above and white on the under surface; they soon run about, and for some days are assiduously fed with small fishes, which are brought to them by both parents.

The RIVER TERNS (*Sterna*) are distinguished from the preceding birds by their somewhat arched, moderately short beak, small short-toed feet, and deeply-forked tail; and by their frequent occurrence at the mouths or along the banks of rivers, or of inland streams or lakes. In size they are considerably smaller than the Caspian Terns, and their flight is much more graceful and swallow-like, always exciting the admiration of the beholder.



BOOBY

BOOBY

THE COMMON TERN.

The COMMON TERN (*Sterna hirundo*, Coloured Plate XXXVIII.), when in its adult plumage, closely resembles the Caspian Sea Swallow, but may be recognised by its inferior size, the grey colour of the under parts of the body, and by its red feet. In young birds the plumage of the back, like that of the preceding species, is transversely spotted with brown, but the feet are of a yellowish shade. The length of this species is from sixteen to seventeen inches; of these six and a half belong to the tail, the fork being four inches deep; the span of the wings is twenty-three inches. It is at present uncertain whether all River Terns are to be regarded as belonging to this species or not. Should they be found to do so, their habitat must extend throughout the whole north temperate zone, seeing that they are pretty equally distributed in the eastern and western hemispheres. They are met with more frequently than other Terns in the vicinity of rivers and lakes of fresh water. As these birds make regular migrations, they are only seen at their breeding-places in the summer, appearing during the last days of April or the beginning of May, and in July or August preparing for their departure. They spend the winter in the south of Europe, or in the north of Africa, where at that season they are very common. When on their journeyings they fly leisurely, and at a considerable elevation, from one sheet of water to another, generally following the course of streams and rivers, to which, if pressed by hunger, they repair, in order to obtain food and rest. Arrived at their destination, they settle themselves either in the vicinity of the sea, or near fresh water, without seeming to have any decided preference for either.

The Common Terns arrive in the south of Europe early in May, and progressing northwards, colonising as they go, visit Ireland, Scotland, and some of the adjacent islands. On inland waters the Terns do not congregate in great numbers. On the sea-shore, on the contrary, as the breeding season approaches, hundreds of them collect together and form large settlements. One of these settlements, on the coast of one of the Canary Islands, was visited by Bolle, who gives the following account of what he saw:—"The farther we advanced the more numerous became the flights of such pairs as we had disturbed, until at length we were obliged to proceed carefully to avoid treading on their eggs, so numerous did they lay around us on every side. Scarcely had we begun to collect some of the eggs in our hats and baskets, than up rose the whole multitude of breeding birds into the air, thousands in number, and overshadowed us like a great white cloud. Their shrieks were positively deafening, and the uproar was still further increased by the appearance of some other men at a little distance, who were likewise collecting eggs. From out of the living screen above us, many of these birds seemed to rush right down upon our heads, and these were probably those whose nests lay nearest to the place where we stood, and were consequently in the greatest danger of being plundered. After a little while, we retired to a distance, whence we could plainly see the different pairs, as they returned to their eggs, upon which the females immediately planted themselves, while their faithful spouses took their stations beside them. We did not leave them, however, till we had completely filled all our baskets with eggs, and this we accomplished in less than an hour. The men above alluded to, informed us that for a few weeks in the year, the place was constantly resorted to by the inhabitants, who eagerly collected the eggs, and that, nevertheless, the number of birds did not seem to diminish; the truth of this last assertion was indeed sufficiently evident." It not unfrequently happens that by some sudden flood in the rivers, or heavy storm at sea, the breeding-places of these Terns are completely inundated, and their eggs consequently destroyed. Should such an event occur early in the season, the parent birds will produce a second brood, but if it happens at a later period, their hope of progeny is at an end. Upon one occasion Naumann had an opportunity of witnessing a fair chase between the Common Tern and the agile Tree Falcon. The Tern did not

put into execution any of the usual manœuvres of water-birds, when trying to escape from pursuit, such as diving below the surface, but took boldly to her wings, and it was truly wonderful to see the adroitness with which all the efforts of the Falcon were foiled; whenever this terrible bird of prey stooped upon his intended victim, she slipped nimbly aside, and thus eluded the fatal clutch; or sometimes she would fall perpendicularly downwards, then mount above her foe towards the skies, rising higher and higher as he followed in pursuit, until at length the strength of the Falcon failed him, and he was forced to give up the chase. This Falcon is, however, very destructive to the young



TERNS AND THEIR NESTS.

Terns, before their wings are strong enough to cope with those of their fleet foe. The eggs of this Tern are either yellowish grey, pale greenish brown or greenish blue, spotted with ash-grey or dark brown. Respecting the movements and noisy vociferations of the Common Terns, Macgillivray says, "When walking along the sandy shore you may see them coming up from a distance, increasing their speed as they approach, and then wheeling and plunging over you, until at last they fly off. Proceeding at a moderate height, they stop now and then, hover a moment, dip into the water, and secure a sand-eel or young coal-fish. Many attend on the fishermen, or others who are catching sand-eels for bait or food, to pick up those which fall from them disabled. On such occasions they are very vociferous, as they also are when they have fallen in with a shoal of fry. They never dive, but I have seen them alight on the water and swim a little, and sometimes a whole flock may be observed reposing on the placid bosom of the waters."

THE LESSER TERN.

The LESSER TERN (*Sternula minuta*) has been considered by some ornithologists as the representative of a distinct sub-family, although it only differs from the preceding species in its inferior size, proportionately strong short beak, the deeply-incised web of its foot, and the shallow furcation of its tail. In this bird the forehead and under side are white, the upper head and nape black, the mantle and wings dark green. The eye is brown, the beak yellow, with black point, and the foot clay-yellow. The length of this bird is eight inches and a half; breadth nineteen to twenty inches; length of wing seven, and tail three inches. The young are spotted like the preceding species. The range of the Lesser Tern extends over Europe, Asia, Africa, and America, from 24° to 58° north latitude. In Brazil it is replaced by a somewhat larger species. The Lesser Tern makes its appearance in Great Britain about May, and after having reared its young, resumes its wandering habits about the end of July or August. It is, however, a slow traveller, and only reaches the lakes and streams of North Africa in the autumn; its migrations from North Asia and North America are conducted in a similar manner. This species prefers fresh to salt water, and chiefly frequents large rivers without, however, altogether withdrawing from the sea-shore. The first requisite for its accommodation would seem to be a little island or bed in a stream, covered with gravel or sand, for where these are wanting it is never to be found. Although the two or three eggs of the Lesser Tern (which have a stone-coloured shell marked with grey, or reddish brown) are usually merely deposited in a slight depression of the ground above high-water mark, Audubon states that some pairs that he found breeding on the coasts of Labrador had formed very snug nests composed of short fragments of moss, well matted together, while those on the island near the Bay of Gaveston had laid their eggs on dry drifted weeds, which appeared to have been gathered by them for this purpose. The same author tells us that the common note of this bird resembles that of the Barn Swallow when disturbed about its nest, and is at times as smartly and rapidly repeated. The following very pretty description of the light and beautiful movements of this Tern whilst on the wing is from the pen of Mr. Macgillivray:—"In the elegance of its buoyant flight as it skims over the waters or shoots on its way to and from its breeding-place, the tiny creature must be an object of admiration to every lover of nature. You may see a pair coming up from a distance flying at the height of a few yards over the waves, their long wings winnowing the air and impelling them in starts, as it were, as they wend their way in undulating and wavering movements. Suddenly their flight is arrested over a large pool left on the sands by the retiring tide; with quick beats of their wings, they hover stationary, or but slightly shifting place, and with downward-pointed bill seem intent on something which they perceive in the water. One drops, but not like a stone, dips, but with upraised wings, and rises with a small fish in its bill. The other is similarly successful. Onward they proceed, now and then emitting a shrill cry and with gentle beats of their wings. Far ahead is a flock engaged in picking up their prey, and onward they speed to join their kindred." Although these birds usually swallow their prey whilst in the air they are occasionally seen to alight upon the ground with their booty, and there devour it piecemeal.

The WATER SWALLOWS (*Hydrochelidon*) constitute a well-defined group belonging to the Tern family. These birds are powerfully built and of elegant appearance; their beak is feeble, tarsus high, toes long and united by a deeply-incised web. The wing is very long, tail short and but little forked. The general plumage, which is soft and thick, is during the breeding season principally black; this latter character, however, varies much according to the age of the bird and season of the year.

THE BLACK MARSH TERN.

The BLACK MARSH TERN (*Hydrochelidon nigra*) is of a deep rich black on the head, nape, breast, and centre of belly; the mantle is blueish grey, and the region of vent white. The wing-quills are dark grey bordered with a lighter shade, and the tail-feathers dark grey. The eye is brown, beak greyish black with red base, and foot brownish red. In the winter dress, only the back of the head and nape are black, the forehead and under part being white. In young birds the mantle-feathers and wing-covers are edged with reddish yellow. The length of this species is nine inches, span of wings twenty-six inches. The Black Tern inhabits the north temperate zone, and during the winter wanders so far south, that, like *Sternula minuta*, it is to be met with in four continents—Europe, Asia, Africa, and America. It makes its appearance in Great Britain at the same time as the other Terns, but is much less abundant than formerly, being seldom seen in the North of England and very rarely in Scotland, although it still visits many parts of Ireland. It arrives in this country about the end of April or beginning of May, and is principally found in Lincolnshire, Norfolk, and Cambridgeshire. In Montagu's time it was common in Romney Marsh, in Kent; specimens have also been procured in other southern counties. During their winter peregrinations these birds generally travel in companies varying from twenty to about a thousand individuals, following the course of the streams, and taking up a temporary residence wherever these spread out into extensive swamps or overflow the neighbouring land. In their deportment, food, and mode of breeding, they also differ materially from the Common Terns. They walk seldom, and as badly as their brethren, and rarely swim, as their powers in that respect are very limited. Their flight is not so rapid and devious as that of their congeners, but more even, gentle, and light. During the night season they betake themselves to repose, but in the daytime are constantly on the wing, hunting after food. The Black Terns live almost exclusively upon insects, although they will also occasionally seize a little fish or other small inhabitant of the water. They somewhat resemble the Swallows in their mode of life, and like them may be seen skimming over pools of water, apparently more for the sake of amusement than from any real necessity for such active exertion. When they discover anything in the shape of food, they hover over it for an instant and pounce upon their prey, not coming down upon it precipitately and perpendicularly as some of the Divers do, but sweeping obliquely towards it, so as to seize it with the beak without immersing their bodies. According to Montagu, "The flight of this species is not unlike that of the Goatsucker; its evolutions are rapid and it turns short if attacked, by which means it escapes the talons of predaceous birds, as we once had an opportunity of witnessing. In a very hard gale of wind many Terns were sporting over the water, when a Peregrine Falcon passed like a shot, singled out his bird and presently coming up with the chase, made a pounce, but the great dexterity of the Tern avoided the deadly stroke and took a new direction. The Falcon, by his superior velocity, soon regained sufficient elevation to successively repeat his pounces, but at last relinquished the pursuit." The Black Terns, unlike the generality of their congeners, are fearless and unsuspicious, and seem rather to welcome than to avoid the presence of mankind; if molested, however, they soon become more wary. Towards each other they manifest considerable affection, and should one of their party be shot, the others instantly collect around their wounded companion, not from any sinister motives, as has been asserted by some writers, but out of commiseration for his condition. For their breeding-places these birds invariably choose some wide swamp or morass, placing their nests upon little heaps of mud that project above the surface of the water, upon tufts of grass or sedge, upon floating masses of reeds, rushes, or similar materials, or sometimes on the floating leaves of aquatic plants. The nest itself is constructed of substances that vary with the locality selected, such as leaves, roots and rushes heaped carelessly together. In this cradle, about the beginning

of June, each pair lays two, three, or four eggs ; these are of a pale olive or yellowish colour, spotted with grey, reddish brown, and brownish black. Both sexes incubate by turns, keeping the eggs constantly covered. If disturbed during the breeding season, these Terns are as noisy as any of their congeners, but unlike them remain close over the nest and only go in search of food at regular intervals. After the lapse of fourteen or sixteen days the young make their appearance, and about a fortnight later quit the nest. Even after they are fully fledged they accompany their parents, who tend them with great devotion, and feed them while on the wing, after the manner of Swallows. This species subsists chiefly on shell-fish, beetles, and dragon-flies. The flesh of the Black Terns is tolerably good.

THE WHITE-WINGED TERN.

The WHITE-WINGED TERN (*Hydrochelidon leucoptera*) has the body-feathers of a rich deep black ; the upper part of the wing is blueish grey ; the shoulders and points of the secondary quills are whitish grey, and the rump and tail-feathers white. This species, which closely resembles the Black Tern in size, manners, and habits, is very rare upon the coasts of Great Britain. Temminck states that it frequents the shores of the Mediterranean, and the lakes, rivers, and marshes beyond the Alps, being common about Gibraltar, and Lakes Como, Lugano, and Lucerne, but that it never visits Holland, or North Europe. Nilsson, on the contrary, includes it amongst the birds of Germany and Scandinavia. The food of the White-winged Tern consists of winged and aquatic insects, worms, and sometimes small fishes.

THE WHITE-BEARDED TERN.

The WHITE-BEARDED TERN (*Hydrochelidon leucopareja*) has the black upon the head and nape divided from the dark grey lower neck by a broad white stripe ; the breast is dark grey, mantle light grey, and belly greyish white. This rare bird was first discovered by M. Natterer, in the marshes of South Hungary, and is but very seldom seen in Great Britain. We are little acquainted with its habits beyond that it subsists upon worms, snails, and winged insects. Yarrell describes the egg as being one inch and a half long, by one and one-eighth broad, with an asparagus-green shell, spotted with brownish black and blueish grey.

THE WHITE OR SILKY TERN.

The WHITE OR SILKY TERN (*Gygis candida*) is a beautiful bird, with slender body, long thin beak, which curves perceptibly upwards, long wings, and deeply excised tail. The feet are small, and the toes furnished with a narrow web ; the plumage is of silky softness and pure white ; the eye is black, the beak dark blue towards its base and black at the point ; the foot is saffron-yellow.

The White Tern inhabits the Pacific Ocean, and is to be met with from Moreton Bay to Cape York. Gould was informed by Mr. Cumming, that on visiting Elizabeth Island, in the South Seas, which is entirely destitute of inhabitants and fresh water, he found this, or an allied species, breeding on a kind of *Pandanus*, its single egg being deposited on the horizontal branches in a depression, which, although slight, was sufficient to retain it in position, despite the high winds and consequent oscillation to which it was subjected. Mr. Cumming added that the old birds were flying about in thousands, like swarms of bees, and that he noticed several breeding on the same tree. Some of the young birds were hatched and covered with down, and being within reach, he took a few of them in his hand, and after examining, replaced them on their dangerous resting-place, from which it appeared they occasionally fell down and were destroyed, as he observed several lying dead on the ground. Gould also refers to a bird of this genus, and perhaps the same species noticed by Darwin in the *Journal of Researches in Geology and Natural History*, who, speaking of Keeling Island,

says :—"There is one charming bird, a small and snow-white Tern, which smoothly hovers at the distance of an arm's length from your head, its large black eye scanning with quiet curiosity your expression. Little imagination is required to fancy that so light and delicate a body must be tenanted by some wandering fairy spirit."

THE NODDY.

The NODDY (*Anous stolidus*) represents a group recognisable by its somewhat clumsy appearance ; its beak is longer than the head, strong, almost straight, and compressed at the sides, with the fore part of the under mandible bent at an angle ; the legs are powerful, and the feet furnished with long narrow toes, fully webbed ; the wings are long, narrow, and pointed, but their apices are somewhat rounded off, the tail is long and wedge-shaped, but not forked. The colour of its plumage, with the exception of the upper part of the head, which is greyish white, is sooty brown, a patch in front of and another behind the eye black, the quills and tail-feathers blackish brown ; the eye is brown, the beak black, and the foot dusky brownish red. The length of the Noddy is sixteen inches, its breadth thirty-two, length of wing eleven inches, of tail five inches. These birds appear to be more widely distributed than any of their congeners ; they are met with both in the Atlantic and the Pacific Oceans, being perhaps most abundant in the latter portion of the globe. Some ornithologists, however, are undecided whether the Atlantic and Pacific birds must be regarded merely as varieties or as distinct species. Mr. Coues, who is of the latter opinion, has proposed to call the Pacific species *Anous frater*. Mr. Gould, however, prefers to describe the Australian bird under the old name of *stolidus*, rather than unnecessarily multiply the number of specific appellations, but he observes that though the Noddies of the northern and southern hemispheres are very much alike, considerable variation is found to exist in their modes of nidification, and the season at which it is performed ; there is also a difference in the colouring and number of their eggs, those in the northern hemisphere being said to lay three, those in the southern only one egg. The Noddy, and an allied species, *Anous melanops*, says Gilbert, are extremely numerous on the Houtmann's Abrolhos, where they breed in prodigious numbers. The present species lays its eggs in November and December, on a nest constructed of seaweed, about six inches in diameter, and varying in height from four to eight inches, but without anything like regularity of form ; the top is nearly flat, there being but a very slight hollow to prevent their single egg from rolling off. The nests are so completely plastered with the excrement of the bird, that at first sight they appear to be entirely formed of that material ; they are either placed on the ground in a clear open space, or on the tops of the thick scrub, over those of the *Onychoprion fuliginosus*, the two species incubating together with the most perfect harmony, and the bushes presenting a mottled appearance, from the great numbers of both species perched on their tops. By the middle of January the eggs were nearly ready to hatch, and there would be an overwhelming increase of this species yearly, but for the check which Nature has provided against it, in the presence of a small lizard, which is very abundant in their breeding-places, and which finds an easy prey in the young.

"About the beginning of May," says Audubon, "the Noddies collect from all parts of the Gulf of Mexico and coasts of Florida, for the purpose of returning to their breeding-places on one of the Tortugas, called the Noddy Key, where they form regular nests of twigs and dry grass, which they place on bushes or low trees, but never on the ground. On visiting their island on the 11th of May, 1832, I was surprised to see that many of them were repairing and augmenting nests which had remained throughout the winter, while others were employed in commencing new ones, and some were already sitting on their eggs. In a great many instances the repaired nests formed masses nearly two feet in height, and yet all of them had only a slight hollow for the eggs, broken shells of which

were found among the entire ones, as if they had been purposely placed there. The birds did not discontinue their labours, although there were nine or ten of us walking among the bushes, and when we had gone a few yards into the thicket, thousands of them flew quite low over us, some at times coming so close as to enable us to catch a few of them with the hand. On one side might be seen a Noddy carrying a stick in its bill, or a bird picking up something from the ground to add to its nest, on the other several were sitting on their eggs, unconscious of danger, while their mates brought them food. The greater part rose on wing as we advanced, but re-alighted as soon as we had passed. The bushes were rarely taller than ourselves, so that we could easily see the eggs in the nests." It is stated that the *Anous stolidus* occasionally visits St. George's Channel, and in 1840 two specimens were shot off the coast of Wexford.

The SCISSOR-BILLS (*Rhynchopes*) constitute a group of night birds, bearing the same relationship to the Sea Swallows as the Owls to the Falcons. Their body is elongate, neck long, head small, wings very long, and the forked tail of moderate size. Their beak is so peculiar in its structure that it can be compared to nothing so happily as to a pair of scissors. The lower mandible is very considerably longer than the upper portion of the bill; the legs are feeble, tolerably long but slender, and the anterior toes connected by a deeply-incised web. The general plumage, which is close and smooth, presents a peculiar, greasy appearance.

THE INDIAN SCISSOR-BILL.

The INDIAN SCISSOR-BILL (*Rhynchops orientalis*) is white upon the forehead, face, tail, under side of the body, and upon the points of the larger wing-covers; the top of the head, back of neck, and mantle are blackish brown; the eyes are dark brown, the beak and feet coral-red. The length of this species is seventeen inches, its breadth forty-two inches, length of wing thirteen inches, and of tail two inches and a half. The Scissor-bill has frequently come under our notice, while travelling along the banks of the Middle and Upper Nile. This bird may occasionally be seen flying by day if it has been disturbed; but it usually remains motionless upon sandbanks from morning to evening, generally lying flat upon its belly, more rarely standing up on its little feeble feet; while thus reposing, it is but seldom that it makes any noise or exhibits the slightest activity. As the sun sets, however, it begins to be more lively, moves about, stretches itself, raises its wings, hops backwards and forwards, and utters its peculiar cry; but it is only as night approaches that it flies away in search of food. Its movements are then in exact accordance with the peculiar structure of its beak. With long strokes of its wings, it glides noiselessly along close to the water, from time to time dipping its lower mandible beneath the surface and keeping it there for a minute or two at a time, ploughing, as it were, the top of the river, with its strangely-shaped under jaw, and skimming the water. In this manner it manages to collect great numbers of the insects, which upon the banks of the Nile, at least, constitute its principal food. Whether it also eats small molluscs, more particularly bivalves, and is skilful in opening them with its beak, we cannot say, but that this is the case with some of its congeners seems to be pretty well established. Lesson states that he saw an American Scissor-bill seat itself quietly down near some bivalve shell-fish left by the tide and wait patiently till they opened their valves, when it inserted its beak between the separated shells, till the occupant again closed its valves and thus laid hold upon the beak; he then flew away with it to a neighbouring stone and beat the shell to pieces. Tschüdi relates the same circumstance, but whether from his own observation or from Lesson's narrative we do not know. At present we entertain some doubts of the accuracy of the observations alluded to. The flight of the Scissor-bill is light and beautiful, but somewhat peculiar, inasmuch as the bird is obliged to raise its wings very high in order to prevent the tips from

striking the water ; its proportionately long neck enables it to do this, allowing it to keep its body at the distance of about an inch from the surface, while a considerable portion of its beak is held under water. Its hunting ground seems to extend for about the space of a mile up and down the stream. In Central Africa it will sometimes leave the river to hunt over some neighbouring pond. On the south and western parts of that continent it may possibly, like its American congeners, occasionally pay a visit to the coast. The cry of the Scissor-bills, which may sometimes be heard when they are passing about in company with each other is very peculiar, and entirely different from the cry of any other bird with which we are acquainted.

In the neighbourhood of Dongola we were fortunate enough to light upon one of their breeding-places. In the month of May we happened to see a number of these birds at their ease lying flat upon a large sandbank, which we were thus tempted to visit, and here to our great delight we found some of their nests. These latter consisted simply of excavations made in the sand ; there was, however, this peculiarity about them, that each seemed to be the centre of a series of radiating lines that looked as if drawn with the back of a knife, and which obviously had been made by the birds, with their lower mandible. The eggs we found bore an extraordinary resemblance to those of the Sea Swallows. They were of an oval shape and in colour of a greenish grey, bordering on yellow, irregularly speckled with light and dark patches and streaks of grey and dark brown. In every nest we found five eggs. Whether both sexes brood or not we were unable to ascertain, neither could we obtain information as to the rearing of the nestlings.

Speaking of the young of the Indian species, Mr. Brooks writes to Jerdon :—"It was amusing to see an army of some hundreds of these little fellows (tortoiseshell-looking things) running steadily a couple of hundred yards before us. They run well, and when we reached the end of the sandbank, they attempted to swim off, while many squatted down ; they did not make much way swimming, and sank very deep in the water."

The GULLS (*Lari*) form a well-defined and distinct family, recognisable by the following characters. Although these birds vary in size, from that of a Jackdaw to that of an Eagle, all are powerfully framed, with a short neck and large head. Their beak, which is of medium length, is strongly compressed at the sides, straight from the brow to the centre of culmen, and from that point to its apex bent gradually downwards, so as to form a strong terminal hook ; both the upper and lower mandibles are provided with sharp cutting edges, and the gape extends backwards as far as the eyes ; the tarsus is moderately high, but slender ; the foot, with few exceptions, four-toed, the interior toes being webbed ; the wings are long and broad, but acutely-pointed, the first quill being the longest ; the tail, consisting of twelve feathers, of moderate length, is broad and straight, less frequently slightly incised ; in a few species the centre feathers are somewhat prolonged. The general plumage, which is thick and soft, and fur-like on the under surface of the body, is very similarly coloured throughout the entire family. Upon the mantle and wings the prevalent hue is a beautiful blueish grey, varied with white and slate-black ; the feathers of the under side (in many species the head and neck) are pure white ; the back and feet of old birds are brighter and often of a different tint to those of the young. Gulls are to be met with in every quarter of the globe, but are most abundant in northern regions. A few species wander to a considerable distance from land, always, however, returning to the vicinity of the shore. All may therefore properly be called coast birds, and to the mariner they are always welcome, as sure harbingers of land. Their flights inland are even more frequent than their excursions into the open sea, and many of them may often be seen following the course of large rivers, or winging their way from lake to lake, into the interior of the country. Some species will frequently settle in the vicinity of inland lakes, and most of them prefer a similar situation as their

breeding-place. Many members of this family are more or less migratory; some appear upon our northern shores in the spring, and after rearing their young, take their departure in the autumn; others again only wander to considerable distances; there are, indeed, but few species that can be properly regarded as stationary. These wandering propensities are intimately connected with their supply of food. All of them live more or less upon fishes, but some also greedily devour insects, and these latter migrate with the greatest regularity. Besides the above articles of nourishment, Gulls eagerly pick up whatever small animals or animal substances they may happen to meet with. Carrion they devour as greedily as do the Vultures, even if it be in a putrid condition. In short, they appear to share the appetites of many other birds, and to be quite as omnivorous as the Crows. All Sea Gulls walk well and quickly; they swim buoyantly, lying in the water like so many air-bubbles, and dive with facility, but to no great depth, plunging probably for not more than one or two feet below the surface. Their voice consists of a harsh, disagreeable scream. As their breeding time approaches, these birds begin to assemble in flocks, which are frequently joined by other parties, until at last they form a numerous host. Even upon our own shores their nesting-places are often occupied by many hundred pairs, whilst further north they congregate in countless multitudes. The larger species crowd less closely together at these times than the smaller ones, the latter often literally covering the rocks on which their nests are so closely placed, that the brooding parents press upon each other. The structure of the nests varies in different localities; where grass and seaweeds are procurable they are carefully heaped together, but where these fail the nests are of still scantier proportions. The brood consists of from two to four comparatively large oval eggs, with strong coarse, brownish green or greenish brown shells, spotted with grey and brown; upon these both male and female sit by turns, for a period of three or four weeks. The young are clothed in a thick covering of speckled down, and shortly after emerging from the shell may be seen trotting about upon the sand, hiding themselves if alarmed behind little hillocks, or boldly plunging into the water. Such, however, as are born upon the ledges of perpendicular rocks, must necessarily remain there until their wings are strong enough to enable them to come down from their lofty perch, for they appear not to take the desperate leaps into the sea attempted by so many sea birds, to their destruction. During the first few days, the young are fed with half-digested food from their parents' crops, and afterwards with freshly-caught fishes, or other small animals. For some little time after they are able to fly they remain together, but soon quit their birthplace, and spread themselves along the coast. In the northern regions the Gulls are not only the most beautiful, but the most useful of the many feathered visitants; they are regarded as property, and as jealously preserved as any other game. In Norway the eggs form a very considerable part of the land proprietors' revenue. Among the poorer inhabitants the feathers are used instead of eider-down for bedding. The flesh of the old birds finds favour only amongst the Esquimaux, while that of the young is eaten by the inhabitants of Greenland and Iceland. If properly cooked, the latter, in truth, form by no means a despicable dish. Still, however, the eggs and feathers are looked upon as far more valuable than this somewhat fishy-flavoured game. In some localities, at certain seasons of the year, great *battues* are held, apparently much more from a love of slaughter than from any desire to turn the birds to account. The chase after Sea Gulls presents but few difficulties, a white pocket handkerchief thrown into the air is quite sufficient to attract their attention, and when they approach, if one is killed many others will at once crowd around it. They are also caught by a great variety of contrivances; snares are laid for them upon the sandbanks, some are caught in nets, and others by means of hooks, baited with fish.

The FISHING GULLS (*Larus*) comprise the larger members of the family, and constitute a well-marked section, principally distinguished by the colour of their plumage. All the members of this

group that we have selected for description are to be met with in northern climates between 60° and 70° latitude, where they breed upon the various cliffs and islands. Sometimes, indeed, they may be seen wandering inland, but, notwithstanding, all are sea-birds in the strictest sense. As regards their movements, they walk well, wade readily in the shallow water near the shore, swim lightly and buoyantly upon a rough sea, and often sleep upon the water. Their flight is slow, but by no means heavy, and can be sustained for a considerable time. With long strokes of their wings they sweep onwards through the air, sometimes flying in circles, sometimes mounting upwards against the wind, and again descend to the surface of the sea. In these flights they appear to be quite at their ease even during the wildest storms, and may frequently be seen plunging into the sea from a considerable height upon any prey that they may happen to espy. In sagacity and courage the Gulls are superior to their kindred, but they likewise surpass them in thieving and gluttony. They care little for the society of their brethren; nevertheless, it is a rare thing to see one of them alone. These Gulls subsist principally upon fishes of various size, and regard carrion, whether fish or flesh, as very delectable food; they also kill and devour small quadrupeds, and young or disabled birds. They rob the feeble sea-fowl of their eggs, and search upon the beach for worms and other animals. Should the shell of a crab or mussel be too hard for their beak, they at once fly with it into the air, and then, dropping it from a sufficient elevation upon the rocks beneath, shatter it to pieces.

THE GREAT BLACK-BACKED GULL.

The GREAT BLACK-BACKED GULL (*Larus marinus*), one of the best-known members of the above group, has the head, neck, under surface of the body, rump, and tail pure white; the upper back and wings are black; the wing-quills tipped with white. In young birds the head, neck, and under side are white, streaked and spotted with yellow and brown; the rump and wing-covers are brownish grey, with light edges; the quills and tail-feathers are black, the latter marked with white. The eye is silver-grey and the ring around it bright red. The beak is yellow, the under mandible being red towards its apex; the foot is light greyish yellow. The length of this species is twenty-eight inches, and breadth sixty-five inches; the wing measures nineteen, and the tail seven inches and a half. The Black-backed Gull frequents the shores of Europe, and, according to Audubon, is met with in North America. In Ireland it is a resident species, and is found dispersed in abundance along the English and Scotch coasts. It breeds in Caermarthenshire on sandy flats, in the British Channel on sandy islands or steep holms, and in the marshes near the mouth of the Thames. Dr. Edmondson says, "This species breeds on the flat grassy tops of a few inaccessible holms, or small islands—as the far-famed Cradleholm, of Ness—in considerable numbers, never in cliffs, and excludes every other bird from such localities. A pair or two—we may suppose the melancholy remnant of a more numerous race—may now and then be met with on lower and more accessible, but still flat situations." It usually produces three young, which, independently of their size, may be easily distinguished from other species by the more distinct speckling with black of their grey plumage. Like all the larger Gulls, it is fond of carrion. In winter these birds feed much on starfish, a meagre and frugal diet, it must be admitted; but the abundance of herrings, in summer, amply compensates for the abstinence of winter. When flocks of Shags are enjoying their gluttonous siesta on the rocks, a Black-backed Gull is very often perched near them, and on such occasions he acts as their sentinel by giving the alarm with his hoarse voice, or taking flight when an enemy endeavours to approach within shot. His deportment is dull and solitary.

During our travels in Norway and Lapland, we found the Black-backed Gull common enough, but it was only at Portsangfjord, towards the northern parts of the country, that we first met with their breeding-places. Upon an island in that vicinity we observed several hundred pairs, in company with



BLACK-BACKED AND HERRING GULLS.

the Herring Gulls. The nests of both species were placed promiscuously upon the ground, seldom more than fifty paces apart. Some of the nests were round, and carefully lined with grass, while others were more negligently constructed. A terrible uproar was raised as soon as we set foot on the island, such birds as had begun to brood remained sitting, and even allowed us to approach within a few steps of their nest, as if they thought that the fact of their presence would frighten us away. At length, however, they got up, and with loud cries flew around us at a little distance, every now and then plunging down as if to strike us, and then rising again, and taking a circuit previous to renewing the attack. Several times they flew so close over our heads that they touched us with their wings, but they did not venture to attack us with their sharp beaks. In several nests the young ones had not only managed to scramble out at our approach, but hid themselves very effectually among the long grass.

The eggs of these birds are usually three, sometimes four, in number, rough, of a yellowish grey or yellowish brown colour, tinged and spotted with dark brown and slate-grey; they are about three inches long, and rather more than two inches broad. Mr. Hewitson, who saw these Gulls breeding in the Orkney and Shetland Isles, says: "Their eggs are rich and excellent to eat; and they are in consequence a most valuable acquisition to the owners of the islands upon which they are deposited. The custom is to take the whole of the first eggs as soon as laid, and the second in like manner, allowing the birds to sit the third time. One gentleman, Mr. Scott, upon whose property they breed, and by whom we were most hospitably received, told us that he had secured sixty dozen of their eggs for winter use, though the extent of the island was scarcely half an acre."

An egg of this species was hatched in a most curious manner by a boat's crew, who kept it in a blanket by day, and near the fireplace at night. For many years this bird lived quite tame at Dartmouth, swimming in the river, and watching for the return of the fishermen, who always threw it a supply of small fishes.

THE LESSER BLACK-BACKED OR YELLOW-LEGGED GULL.

The LESSER BLACK-BACKED OR YELLOW-LEGGED GULL (*Larus fuscus*). In the summer plumage of the adult bird, the head and whole of neck, all round, are pure white; the back, wing-covers, and all the wing-feathers dark slate-grey, the tips only of some of the longer scapulars and tertials being white, the shorter of the primaries have white tips; the upper tail-covers and tail-feathers are white, the breast, belly, and all the under surface of the body pure white, legs and feet yellow, bill yellow, inferior angle of lower mandible red; and the irides straw-yellow. The whole length is twenty-three inches, from the anterior joint of the wing to the tip of the longest quill-feather sixteen inches. In winter the head and neck are streaked with dusky brown.

THE HERRING GULL.

The HERRING GULL (*Larus argentatus*). In summer the adults have the head and neck pure white, the back and all the wing-covers uniform delicate French grey; tertials tipped with white; primaries mostly black, but grey on basal portion of inner web, and the first primary with a triangular patch of white at the end, the second and third with smaller portions of white; upper tail-covers and tail-feathers pure white; chin, throat, breast, belly, and whole of under surface of body and tail pure white; legs and feet flesh-colour; bill yellow, angle of under mandible red; edges of eyelids orange, irides straw-yellow. The length is from twenty-two inches to twenty-four inches and a half, depending on the age and sex; wing from sixteen inches and a half to seventeen and a quarter long. In winter the adult birds have the head streaked with dusky grey. This species is common along the whole of the south coast of England, and is particularly numerous in the Isle of Wight, from Freshwater Bay to the Needles.

During winter the Herring Gulls spread themselves along the coast, especially frequenting the estuaries where young herrings are congregated. "When engaged with a shoal of fry," says Macgillivray, "the Herring Gulls hover over the water, now ascending to a height perhaps of twenty feet, then skimming close over the surface, and on observing an object, stretching upward and vibrating their wings and letting down their feet so as to touch and sometimes pat the water, they pick it up without alighting. Sometimes they plunge partly into the water, and occasionally seize their prey while swimming. All this while they emit now and then a loud and rather shrill cry. They feed on shell-fish, and occasionally large dead fishes, crustaceans, molluscs, echini, &c. During the winter and spring they travel inland, seeking for insects, worms, and similar fare, they rest on beaches and headlands, usually lying down, but sometimes standing on one leg."

Audubon observed these birds in great numbers in the Bay of Fundy. "The rocky shores of the islands on which I saw them breeding," says this writer, "are covered with multitudes of sea-urchins, having short greenish spines, which give them the semblance of a ball of moss. At low water, the Herring Gulls frequently devour these animals, thrusting their bill through the shell and sucking its contents. They also take up shells into the air and drop them upon the rocks to break them. We saw one that had met with a very hard mussel, take it up and drop it three times in succession before it succeeded in breaking it, and I was much pleased to see the bird let it fall each succeeding time from a greater height than before." While on Whitehead Island, in the Bay of Fundy, Audubon saw numbers of the nests of these birds on fir-trees, some being placed near the top, others on the middle or lower parts of the trees. He was informed by the proprietor of the district that in his memory these Gulls had built their nests on moss, on open ground, but their nests having been robbed and the birds otherwise annoyed, they had betaken themselves to the thickest parts of the woods, hoping that by placing their nests on the trees they would be out of the reach of their arch-enemy, man. The nest of the Herring Gull, which is frequently placed on ledges of rocks, is usually formed of grass, or any other vegetable matter that may be at hand. The eggs are laid about May: these vary much both in size and colour. The young remain in the nest until they are partially fledged, but at once quit it if alarmed, and frequently take to the water if pursued.

THE LARGE OR GLAUCOUS WHITE-WINGED GULL.

The LARGE OR GLAUCOUS WHITE-WINGED GULL (*Larus glaucus*) is almost entirely white, with a faint blue tinge upon the back and wing-covers; the primaries are also white, and extend but little beyond the end of the tail. The bill is yellowish white, except upon the inferior angle of the lower mandible, which is reddish orange; the eyes are pale yellow, and legs and feet flesh-red. In winter the head and neck are slightly streaked with dark grey. The length of this species is about thirty inches; the wing measures nine and a half, and the tail eight inches and a half; according to Yarrell, some have been taken that measured thirty-two and thirty-three inches. The White-winged Gull is an inhabitant of the high latitudes, and was found in great numbers by our Arctic voyagers in the Polar Seas, Davis' Straits, and Baffin's Bay, breeding on precipitous rocks and ledges of cliffs. The Glaucous Gull is also common in Russia, on the shores of the Baltic, and has been found in France, Germany, Holland, and various parts of our own and the Irish coast. It visits Shetland about the middle of autumn, and departs about the end of spring. It frequents open bays, and attends fishing-boats a few miles from land, in order to feed upon any refuse that may be thrown overboard. Sometimes, if allured by carrion, it will even venture inland. This Gull is very rapacious, and when deprived of other food will fall upon small birds and eat them. Sir J. Richardson tells us it feeds upon carrion, and during Captain Ross's expedition one specimen when struck disgorged an Auk, and after death another was found in its stomach. In disposition it is shy and inactive, and exhibits little of the

clamorousness observable in most other members of the genus. The Dutch have bestowed the name of "Burgomaster" upon this bird; and, according to Scoresby, it may with propriety be called the chief magistrate of the feathered tribe in the Spitzbergen regions, as none of its class dare dispute its authority, when with unhesitating superiority it descends on its prey, though in the possession of another. The "Burgomaster" is not a numerous species, and yet it is a general attendant on the whale-fishers, whenever any spoils are to be obtained. It then hovers over the scene of action, and having marked out its morsel, descends upon it, and carries it off on the wing. On its descent, the most dainty food must be relinquished, though in the grasp of the Fulmar Petrel, the Ivory Gull, or the Kittiwake. It seldom alights in the water; when it rests on the ice it selects a hummock, and fixes itself on the highest pinnacle. Sometimes it condescends to take a more humble situation, that offers any advantages for procuring food. Upon these occasions the peculiarity of its appearance is very striking. Its usual deportment is grave and imposing, exhibiting little of the vivacity or inquisitiveness of many of its tribe; it is roused to exertion chiefly by a sense of danger, or the cravings of hunger. When it flies, it extends its wings more than any other species of Gull, and its flight is remarkably buoyant; when not in quest of food it is of a reserved disposition, seldom coming within range of a fowling-piece, but keeping at a respectful distance, it utters at intervals a hoarse scream, of a sound peculiar to itself. Scoresby found the eggs (which are of a yellowish grey, spotted and blotched with brown and grey), deposited on the beach above high-water mark, in such a manner as to receive the benefit of the full rays of the sun. According to Dr. Edmondson, a single bird of this species may occasionally be met with accompanying a large flock of other Gulls, and feeding with them.

THE LESSER WHITE-WINGED GULL.

The LESSER WHITE-WINGED GULL (*Larus leucopterus*) has the head and neck entirely pure white; the back and wings are pale grey; the primary quills, chin, throat, breast, entire under surface, and tail of a beautiful pure white. In the male the bill is yellow, with red angle to lower mandible; the eyes are straw-colour, and the legs flesh-red. This species is twenty-two inches long; the pointed wings when closed extend two inches beyond the tail. According to Faber this Gull has grey spots on its winter plumage. The Lesser White-winged Gull (formerly confounded with *L. glaucus*) occupies the northern portions of the globe, and has been seen by Arctic voyagers in Davis' Straits, Baffin's Bay, and Melville Island. It is also found in Greenland, and, according to Audubon, is seen in North America from Nova Scotia to New York during the winter months. This species is less shy than the Herring Gull, it also proceeds farther up the rivers and salt-water creeks, and alights more frequently in the water or on salt meadows than that bird. A few examples have been shot in Northumberland, Yorkshire, and Ireland, as well as in the Orkney and Shetland Isles. According to Faber this is the only Gull that winters in Iceland without breeding there. "I have," he says, "travelled over most of the coast of the island, but have never found its breeding-place. A few days after the middle of September a few specimens, both old and young, make their appearance on the coast of Iceland, confining themselves to the northern parts, among the small inlets of which great numbers pass the winter. When I lived on the innermost of the small fjords on the northern coast, these birds were our daily guests. Towards the end of April their numbers decreased, and by the end of May they had nearly all disappeared from Iceland. These tame birds came on land by my winter dwelling on the northern coast, to snap up the entrails thrown away by the inhabitants, and fought for them fiercely with the Raven. I had made one so tame that it came every morning at a certain time to my door to obtain food, and then flew away again. It gave me notice of its arrival by its cry. These Gulls indicated to the seal-shooters in the fjord where they should look for seals, continually following their track in the sea, and hovering over them in flocks, with incessant

cries, and while the seals hunted the sprat and the capelin towards the surface of the water, these Gulls precipitated themselves down upon the fishes, and snapped them up. In like manner they follow the track of the cod-fish in the sea, to feed upon the booty hunted up by this fish of prey. In the winter of 1821, which I passed on the southern coast, there was not a single *Larus leucopterus* to be seen. On the 1st of March, the shore was almost free from Sea Gulls; but as I stepped out of my room early on the 2nd of March, the air was almost filled with a species of *Larus* which had appeared suddenly. As I approached and looked up at them, I soon recognised my *Larus leucopterus*, which had arrived in great numbers during the night. The Icelanders concluded, from the sudden appearance of these Gulls, that shoals of codfish must have arrived on the coast. They got ready their fishing-boats and nets, and the fish had in truth arrived in such numbers that the fishing for that season commenced immediately. There, where hitherto an ornithological quiet had reigned, everything now became enlivened through the arrival of these birds, which without intermission and with incessant cries hovered over the nets. In this year, 1821, they remained on the southern coast till the middle of May, when they entirely left it, to proceed northward to their breeding-places. This Gull was my weather-guide in winter. If it swam near the shore, and there, as if anxious, moved along with its feathers puffed out, then I knew that on the following day storms and snows were to be expected. In fine weather it soared high in the air. These birds often sit by hundreds on a piece of ice, and in that way are drifted many miles."

Mr. Yarrell describes a specimen egg in the collection of Lady Cust as being two inches and a half long by one inch and three-quarters broad, of a pale greenish white colour, with numerous spots and specks of two shades of brown, with others of a blueish-grey, over the surface generally.

The ICE GULLS (*Pagophila*) are recognisable by their slender build, proportionately longer wings and tail, smaller feet, and shorter web between the toes.

THE IVORY GULL.

The IVORY GULL (*Pagophila eburnea*) is pure white, at times suffused with a blush of pink. The eye is yellow, and the eye-ring carmine-red; the bill over half its length from the base is blueish, towards its apex reddish yellow, and there is a ring of greenish yellow just in front of the nostrils; the feet are black. In young birds the head and neck are greyish; the feathers of the mantle, the quills of the wings, and the ends of the tail-feathers speckled with black. The length of this bird is twenty inches; breadth, forty-two inches; length of wing, thirteen inches and a half; length of tail, five inches and a half.

The Ivory Gull is an inhabitant of the Arctic Regions, and is only a rare visitor in lower latitudes. It may be regularly met with at Spitzbergen, as also in the Asiatic part of the Arctic Ocean, and in the northern parts of Greenland, but even Iceland seems too far south for its residence. In Greenland it can hardly be called scarce, seeing that during and after the autumnal storms it sometimes makes its appearance in great numbers. Audubon tells us that it visits the southern parts of Labrador and Newfoundland every winter. A few individuals have been seen on different parts of the British coasts. "Although so delicate in appearance," says Scoresby, "this Gull is almost as rare as the Fulmar Petrel, and as little nice in its food; it is, however, more cautious. It is a constant attendant on the flensing operations of the whale-fishers, when it generally seizes its portion while on the wing." Like all other birds inhabiting extreme northern latitudes, it is easily captured; indeed, Holboell states that it may be tempted to come within reach of the hand with a bit of bacon tied to a string. Wherever a walrus has been killed these birds are sure to make their appearance, and so devoid of shyness are they, that by throwing them bits of blubber a man may catch as many of them as he chooses.

Numbers of these Gulls are constantly to be seen upon the caches left by the seal-hunters, or the Polar bears, and they are always present around the holes or rifts in the ice, to which seals generally resort. As relates to the breeding of these birds, the same author tells us that on the 7th of July, at the northern extremity of Murchison's Bay, he saw a great number of them upon the ledges of a perpendicular cliff of limestone in company with a variety of other birds. It was easy to perceive that the females were sitting upon their eggs; these were at the time quite unapproachable, but on the 30th of June he was ably assisted by a party of men, furnished with long ropes, to get at some of the nests, which consisted of a small quantity of grass, spread upon the bare rock, and rudely lined with grass, seaweed, moss, and feathers.

The KITTIWAKES (*Rissa*) may be selected as the representatives of the Three-toed Gulls, their distinguishing character being that the hinder toe is wanting or reduced to a mere rudiment. Should other points of difference be sought for, they may be found in the feebleness of the beak and in the proportionately short tarsi. The toes, however, are long, and the feet provided with well-developed webs. In the adults, the plumage upon the head, neck, rump, tail, and under parts of the body is snow-white, and on the mantle blueish grey, the wings are whitish grey, black at the points. The eye is brown, the eye-ring coral-red; the beak citron-yellow, red at the corner of the mouth; the foot black, yellowish in the sole. After their autumnal moult, the hinder neck becomes blueish grey, and a round spot behind the ear black. In young birds, the mantle is dark grey, each feather being margined with black. The length of this Gull is from sixteen to seventeen inches, the breadth thirty-seven to thirty-nine inches; the length of the wing twelve inches, and of the tail five inches.

This bird is an inhabitant of high northern latitudes; during the winter, however, it leaves the frozen ocean, and not only appears in considerable numbers upon the shores of Great Britain, but extends its flight to places much farther south. These Gulls are seen inland more frequently than the generality of their kindred, as they often follow the course of rivers to a considerable distance into the interior of the country, sometimes appearing there in large flocks. In Iceland and Greenland their arrival is always hailed as the harbinger of spring. They make their appearance there between the 8th and 20th of March, and although the weather is still piercingly cold, proceed at once to take possession of the rocks where they intend to breed, as though each pair were anxious to lose no time in securing a resting-place. Should the ledges of the rock happen to be covered with snow, the Kittiwakes are more than usually restless, and their unremitting shrieks are almost deafening. They remain in their summer residence till near November, about which time they leave the fjords and fly away into the open sea.

In their habits the Kittiwakes are perhaps more sociable and noisier than the rest of their family, but in other respects they present nothing particularly noticeable. They walk badly, and therefore seldom come on dry land, but they swim well, even in the roughest weather. Their flight is light, easy, and much diversified, sometimes sweeping around in beautiful gyrations, sometimes urged rapidly forward by long strokes of their wings. Occasionally they will plunge from a considerable altitude into the water, to catch a fish, or seize upon any food that happens to present itself. They never seem to quarrel, and it is really wonderful to observe in what harmony thousands, or we might say millions, of them live together.

For their breeding-places these Gulls invariably select rocks well furnished with ledges, projections, or cavities, ranged one above another, and it is on these shelves or within the hollows, that they place their nests. From the foot of the rock to its very summit, each "coign of vantage" is appropriated, each platform covered, and if not exactly cooing like so many Doves, at least they make as musica' shriekings and screechings as a Sea Gull is capable of producing. During all this

love-making, great numbers are continually flying hither and thither in search of materials with which to build, so that the whole hill is surrounded with them, and when seen at a distance they present very much the appearance of a swarm of bees. Previous to our visiting Lapland we had read descriptions of these breeding-places, but from them had formed a very imperfect conception of the reality. Never shall we forget the day on which we made an excursion to Svärrholt, not very far from the North Cape. The vast perpendicular front of the rock to which the Gulls resorted, looked as we approached it like a gigantic slate covered all over with millions of little white dots. On our firing a gun, all these millions of shining points seemed to detach themselves from the dark background, afterwards to become alive, next to become Sea Gulls, and then to pour themselves in a continuous stream into the sea. Looking upwards it seemed exactly as if a great snow-storm had begun to shower gigantic flakes from the skies—for minutes together it snowed birds, the whole sea, as far as we could discern, was thickly covered with them, and yet the surface of the rock seemed as densely peopled with birds as at first. We had before thought the narratives we had read were exaggerations, we now found them to be far below the truth. In every nest these birds lay three or four eggs of a dirty rusty yellow, sparsely besprinkled with dots and streaks of a darker tint. It is only reasonable to suppose that each pair devote themselves exclusively to the incubation of their own eggs and the rearing of their own young. But how a pair, among all those hundreds of thousands of nests can ever find their own abode, or even each other, when they have once left their place even for a minute is beyond our comprehension. The young birds remain in the nest till the middle of August, at which time they are sufficiently fledged to enable them to fly out to sea and add their voice to the deafening screeching of their fellows.

The BLACK-HEADED GULLS (*Chroicocephalus*) constitute a group whose most conspicuous character is that, when in their nuptial dress, their head is covered, as it were, with a black cap. We can hardly, from this circumstance, regard them as a distinct sub-family; nevertheless, they present certain peculiarities not common to the race. All these birds inhabit temperate climates, and seldom or never appear in the northern regions visited by so many other species. The food of the Black-headed Gulls consists principally of insects and small fishes; however, they by no means despise small quadrupeds or carrion. Insects they generally catch in the water and pick from the surface of the ground, but occasionally they take them while on the wing. The young are fed almost exclusively on insects.

THE LAUGHING GULL.

The LAUGHING GULL (*Chroicocephalus ridibundus*). The adult in summer has the head, occiput, and upper part of the neck of a dark brown, the colour being most intense when first assumed, and becoming lighter by time and wear; the sides and back of the neck are pure white; the back, wing-covers, secondaries, and tertials, uniform French grey; the first three quill primaries white on the shafts and webs, but margined with black; the fourth white on the outer web, grey on the inner web, and edged with black; the fifth and sixth grey on both webs, the edge of the inner or broader web and the point black; tail-covers and tail-feathers white; front of the neck, breast, and all the under surface of the body and tail pure white; legs and feet, like the beak, are vermilion-red; irides hazel; eyelids orange.

The adult bird in winter has the head only slightly marked with a dusky patch at the ear-covers. The young are brownish on the upper parts of the body. This species is sixteen inches long, and thirty-six inches broad; the wing measures twelve and tail five inches.

With regard to the change in colour of the head according to the season of the year, Mr. Yarrell observes: "A Gull in the collection at the Gardens of the Zoological Society began to change colour

on the head, from white to dark brown, on the 11th of March ; it was a change of colour, and not an act of moulting ; no feather was shed, and the change was completed in five days."

The Laughing Gull is plentiful from 30° to 60° north latitude, and within this zone it rears its young. It is met with pretty nearly in equal numbers upon suitable inland waters in Europe, Asia, and America. In the South of Europe it is seen throughout the year ; in Central Europe and Great Britain it is only a visitor, leaving us in October and November to take up its quarters upon the shores of the Mediterranean. It is, however, said to be a constant resident in Ireland.

When the snow begins to melt, these Gulls return, and in fine seasons arrive at their more northern terminus towards the end of March, or at the beginning of April. Before commencing their



THE LAUGHING GULL (*Chroicocephalus ridibundus*).

journey, the old birds have already selected their mates ; they accompany their partners at once to the breeding-places, but the younger ones seem to defer their courtship till they arrive at their destination. They only live in the sea during the winter, and it is seldom that they breed even on islands near the coast. Fresh waters, surrounded by fields, are their favourite places of resort in the summer season, and here they find everything that they require. These birds are abundant at the mouth of the Thames, where they lay their eggs on the low flat islands and marshes of Essex. In Norfolk an extensive piece of water, called Scoulton Mere, has from time immemorial been one of their favourite breeding-places. The eggs, which are most abundant there about May, are assiduously collected, and are sometimes so plentiful that we are told a man and three boys have obtained 1,600 in a single day.

When swimming, these Gulls may be regarded as ornamental birds, more especially when they are in their full plumage. Their movements are extremely elegant and graceful, they walk quickly, and are not readily tired, and for hours together may be seen following the ploughman, or roaming about fields and meadows in search of insects. They swim beautifully, but not very rapidly. They rise readily into the air, either from the surface of the ground or from the water, and apparently

without effort perform a variety of pleasing evolutions during their flight. In some of the Swiss cantons, and in all parts of Southern Europe lying near the sea, they are treated by the inhabitants as if half domesticated. They may be seen everywhere, running about with the greatest confidence, as if they knew very well that no one would attempt to do them an injury. Their voice is harsh and disagreeable, earning for them doubtless the name of Sea Crows, whereby they are generally designated. Towards the end of April the breeding season commences, and after much quarrelling the place selected where each pair is to build its nest. These birds never breed separately, seldom in small parties, but most generally in large flocks, of hundreds or rather thousands of birds, which generally crowd themselves together into a very limited space. Their nests are usually placed upon insulated patches of ground surrounded by water, or situated in the centre of a marsh, and overgrown with sedges, reeds, and rushes; under some circumstances they will build in the marsh itself, sheltering their nests among tufts of grass, but always in some unfrequented situation, to which access is nearly impracticable. The foundation of the nest is laid by flattening down the herbage and lining the cavity so formed with leaves, straw, and similar materials. The eggs, which are deposited about the beginning of May, to the number of four or five in each nest, are tolerably large, of a pale olive-green colour, speckled, spotted, and streaked with ashy-grey and dark brownish grey, but the eggs vary considerably both in size, colour, and markings. The two sexes brood alternately, one or other of them remaining constantly upon the nest during the night, but in the day-time they seem to think the heat of the sun an efficient substitute for their presence. After the lapse of about eighteen days the young make their appearance, and in about three or four weeks afterwards are completely fledged. In situations where the nests are surrounded by water the young ones do not leave them during the first few days, but if they are situated upon dry ground the little nestlings scramble out and run about very actively. When a fortnight old they are able to flutter from place to place, and at the end of the third week are almost able to take care of themselves. The courage with which the parents defend their young is most exemplary. No sooner does an enemy in the shape of a Hawk, a Crow, or a Heron make its appearance, than a tremendous outcry is raised by the whole colony, even the brooding birds leave their nests, and all rush forward to oppose the invader. A dog or fox they attack with equal fury. Should a man intrude upon them they fly around him in circles, screaming with all their might, and if, deafened by the noise, he retires, he is followed to some distance, with every indication of joy at his departure.

In the north of Germany it is common on a certain day to have a general *battue*, and slaughter the poor Gulls by wholesale. This useless destruction, which, under the name of "the Gull-shooting," serves as an excuse for a general holiday, savours much of the barbarism of the Dark Ages; as, far from being pernicious, these beautiful birds render important services to the farmers by clearing the land of a vast quantity of hurtful insects.

THE GREAT BLACK-HEADED GULL.

The GREAT BLACK-HEADED GULL (*Chroicocephalus ichthyaetus*) in its summer plumage has the entire head and upper neck black, the feathered orbits white, back and wing blue-grey, upper tail-coverts and tail pure white, with a black band, primaries with a black band, increasing in width to the outermost one, which has the whole of the web black, the rest of the first five primaries white, the others grey, tipped with white; the other parts of the plumage are pure white; bill red, yellow at tip; irides brown; feet dull red; length about twenty-six inches; wing nineteen to twenty inches; tail seven inches; bill at front two inches and a quarter; tarsus three inches; the closed wing extends about one inch and a half beyond the tail. This bird inhabits Northern and Central Asia, and is rare in India. Jerdon observed it on the sea-coast at Madras, and occasionally ascending the Hooghly and other

large rivers. It frequents the borders of the Caspian Sea. The eggs, which are oblong, and marked with deep brown and paler spots, are laid on the bare sand, near large rivers. When flying, the hoarse voice of this bird resembles that of the Rover.

THE LESSER BLACK-HEADED GULL.

The LESSER BLACK-HEADED GULL (*Chroicocephalus melanocephalus*) is about fifteen inches and a quarter in length. In this species the whole head, except a small patch of white above and beneath the eye, is of an extremely deep black; the back of neck, chest, tail, and all the under parts are pure white; the whole of the upper part, delicate pearl-grey; primaries, white at their tips, the outer web of the first primary black for three parts of its length; beak, legs, and eyelids vermilion, irides brown. This bird inhabits Southern Europe, particularly the shores of the Adriatic. It abounds in Dalmatia, breeding in the marshes.

THE LITTLE GULL.

The LITTLE GULL (*Chroicocephala minuta*). In winter the entire upper surface of the adult's plumage is of a blueish ash; quills and secondaries tipped with white; throat and under surface pure white, with a slight tinge of rose-colour; bill brownish red; tarsi bright red; irides brown. In summer the whole of the head and upper part become of a brownish black. It is found, though not in great abundance, in the western part of Europe. This species inhabits the eastern parts of Russia, Livonia, and Hungary, and the shores of the Black and Caspian Seas.

It is rare in Great Britain, and was first described as a British bird by Montagu, in his "Ornithological Dictionary." According to Temminck, it feeds on worms and insects. Little, however, is known of its habits.

The SKUAS (*Lestres*), although resembling the Gulls in shape and plumage, differ from them in so many particulars that they must be regarded as forming a separate family. The principal points of difference between these birds and the true Sea Gulls are found in the structure of the beak and feet, as also in the peculiarity of their colours, and in their mode of life.

In the Skuas the body is strongly built, the neck short, the head small, the beak moderately short but strong, thick, and towards the apex compressed. The upper mandible is vaulted above, strongly hooked, and provided at its base with a cere. The tarsus is moderately high, the toes short, but with a very complete web, and furnished with crooked, sharp-pointed, and sharp-edged claws. The wings are long, narrow, and pointed, the first quill being the longest. The tail consists of twelve feathers, of moderate length, and has the central tail-feathers prolonged. The plumage is rich and thick, upon the under surface fur-like; its prevailing colour is a dusky brown.

The Skuas, or Parasite Gulls, are most abundant in the Arctic Regions. They live principally in the open sea, but at their breeding-time seek the neighbourhood of coasts and islands. Occasionally they wing their way into more southern latitudes, and sometimes are to be seen far inland. In strength of wing they are superior to the Gulls, and they swim well, but prefer flying to swimming. In a certain sense, they might be said to hold a middle position between Sea Gulls and birds of prey. They attack all animals that they are able to subdue, and persecute their weaker brethren until they oblige them to yield up whatsoever prey they may have caught. Indeed, it was recently generally believed that they were unable to catch prey for themselves, but were obliged to live the life of freebooters, and depend upon thieving for their support; modern observations have, however, shown that this is not altogether correct. It is, however, quite true that their power of diving is not such as to enable them to catch fishes at any great depth; they can only procure such as may be swimming close to the

surface. They are, however, by no means confined to a fish diet ; they devour birds and their eggs kill small quadrupeds, and prey upon shell-fish of every kind. They will even attack young lambs hack out their eyes and brains, and, in short, prey upon everything that offers itself, whether living or dead. Generally, however, they live by the labour of other diving birds. They watch the Gulls, Terns, Guillemots, and other predatory species, and whenever they perceive that they have caught a fish, hasten after them with all speed, and so torment and worry them as to compel them to disgorge their already swallowed prey, and let it drop from their mouths. No sooner do their pursuers see it fall than, swooping after it with the speed of a Falcon, they catch it before it reaches the water, and appropriate it to their own use. Such barefaced robbery as this naturally causes the Skuas to be detested by all seafaring birds ; nevertheless, they seem to care very little for the general hatred, and recklessly pursue their system of plunder whenever opportunity offers. No sea-bird will brood in their vicinity, or remain upon any inland lake of which they have possession. Every individual who has once made their acquaintance endeavours, as the sailors say, to give them a wide berth. The more valorous species often attack them furiously ; the timid flee at their approach, or if they are in a position which enables them to do so, dive out of their sight. When their breeding-time arrives, the Skuas assemble in small parties, and build their nests in company with each other. The places selected for this purpose are generally large islands, some species preferring the level of the shore, others the summits of the highest rocks. In these localities they scratch or construct for themselves a round excavation in the sand, and, if practicable, concealed among plants, and in the ample nest lay two or three eggs, upon which the male and female sit alternately. The young are fed at first with food partially digested in the stomachs of their parents, subsequently upon coarser diet. They remain in the nest for several days, and when they leave it run about on the beach like young birds, hiding themselves, in case of danger, between the stones, or among the inequalities of the ground. After they have become capable of flight, they continue for some time in the neighbourhood of the coast, profit by their parents' instructions, and in their company they at last fly away to the open sea. In the second summer of their lives they begin to breed. The eggs of the Skuas are eaten by the inhabitants of northern countries, but the birds themselves are considered worthless ; nevertheless, they are killed in great numbers. The chase after them is easy enough, inasmuch as they will greedily swallow any kind of bait, and fear man no more than they do the birds that they plunder.

THE COMMON SKUA.

The COMMON SKUA (*Lestris catarractes*), the most conspicuous member of the above family, is twenty-two inches long, fifty-two inches broad ; the length of its wing sixteen inches and a half, of the tail, six inches and a half. The colour of its plumage is greyish brown, the somewhat lighter under surface is striped longitudinally with pale or red grey ; a space at the base of the dark-coloured wing is white ; the eye is red-brown ; the beak leaden grey at the root, and black at the apex ; the foot blackish grey. The young birds resemble the adults.

Although the proper climate of the Skua is between 60° and 70° north latitude, it has also been met with in the temperate zone of the southern hemisphere. In Europe its head-quarters are in the vicinity of the Faroe and Shetland Islands ; also on the coasts of Iceland, and the Orkneys and Hebrides, ranging from thence, in the winter season, to the northern shores of France, England, and Germany. The greater number of them, however, remain constantly in the north, seeking for their food wherever the sea may happen to be free from ice.

The Skua is recognisable from the larger Gulls by the varied character, facility, and rapidity of its movements. It runs quickly when upon dry land, swims beautifully, floating with its breast deeply immersed, and rises easily into the air, whether from the sea or from level ground. The flight of this

bird resembles that of the larger Sea Gulls, but is not so equable. Sometimes the celerity of its movements will bear comparison with those of the Hawks and Eagles. Sometimes it skims over the surface of the sea without the slightest perceptible motion of its wings, or rushes from a great height obliquely downwards towards the surface of the sea, tearing through the air with surprising rapidity. In daring, thieving, and unsociableness it not only far exceeds the Gulls, but surpasses every other sea-bird. Of all the tyrants of the sea it is the most universally dreaded ; it has no participation or friendship with any other species ; and although only the strongest of its enemies ever venture to



THE COMMON SKUA (*Lestr. s. catarractes*).

attack so redoubtable a foe, it is held in universal abhorrence. The opinion entertained by other birds as to its cunning and ferocity is best exemplified by the fact that even such as are far larger and stronger than their oppressors submit to be robbed and bullied in the manner we have described, without making the slightest resistance. The appetite of the Skuas is exactly proportioned to their restlessness and activity. So long as they are on the wing they are constantly employed in satisfying the cravings of their ravenous maw. Should no other bird appear in sight upon which to exercise their avocation as highwaymen, they are under the necessity of fishing for themselves, and if not successful in their endeavours to obtain a meal, have recourse to the shore, upon which they diligently search for anything in the shape of food that may have been left by the receding tide. Should this resource likewise fail them, they fly off into the fields and inland marshes, where they pick up worms, insects, and small mollusca ; or should they meet with a sea-bird similarly occupied, they at once give chase, exhibiting

as much strength and skilfulness in the use of their wings as they do courage and audacity in planning their attack, never leaving their victim until they have made him disgorge the contents of his stomach, and appropriated it to their own use. Not unfrequently, indeed, they will kill and devour the bird itself. Graba tells us that he saw one of them at a single blow shatter the skull of a Coulter-neb, and various witnesses testify that they eat Sea Gulls and Guillemots, striking them dead with their beaks, and afterwards tearing them to pieces. Wounded or disabled birds they remorselessly devour. In the breeding-places they plunder the nests, breaking the eggs and swallowing the young. "A general shriek," says Nordmann, "rises from a thousand throats as soon as one of these marauders is seen winging his way towards the rock, and yet none of the brooding birds will venture to offer anything like a serious resistance to the invader. He seizes hold of the young birds, wrenching them from the very beaks of their parents, who only follow the robber to a little distance from the nest, without any effectual result. So soon as the thief finds himself no longer pursued, he flies down to the sea, kills and devours his prey, and then flies off with it to his own nest, where he disgorges it for the benefit of his young family. When making these raids, the Skua has never been observed to use any other weapon than his beak, although it would seem probable, from the sharpness of his powerful, strongly-hooked claws, that they likewise may be resorted to as formidable instruments of attack. After a plentiful meal, the Skua betakes himself to some rock, where he sits for a time with puffed-out feathers, apparently enjoying a luxurious nap, and in that position he remains till the calls of hunger again prompt him to active exertion."

About the beginning of May, the Skuas may be seen congregating in pairs in the vicinity of their breeding-places, where, upon some rocky platform or moss-grown overhanging ledge, they construct their nests. These are generally mere cavities, hollowed out by the pressure of their bodies, and here, during the first days of June, they lay two eggs of a dirty olive-green colour, spotted with brown. One of their breeding-places visited by Graba was occupied by about fifty couples. According to Mr. Dunn, this species has three breeding-places in the Shetland Isles—Foula, Rona's Hill, and the Isle of Unst. In the latter place it is by no means numerous, and is strictly preserved by the landlords on whose property it may have settled, from a supposition that it will defend their flocks from the attack of the Eagle. That it will attack the Eagle if he approaches its nest is a fact that I have witnessed. I once saw a pair beat off a large Eagle from their breeding place on Rona's Hill.

Should a man approach the nest, the old birds at once fly into the air screaming furiously, and sometimes boldly attack the rash intruder on their privacy by dealing violent blows about his head and face. Sometimes, according to Graba, bird-catchers hold knives above their caps, upon which the birds occasionally impale themselves as they swoop violently down and endeavour to wound the enemy's head. Both parents assist in the work of incubation, and hatch the eggs in about four weeks. The young are nimble, gallant little fellows, and leave the nest almost immediately after quitting the shell. A writer in the Records of the Wernerian Society informs us that on alarm of danger they secrete themselves with great art behind stones, or in holes, and if captured make a most amusing show of defence. When first hatched, the fledglings are warmly clad in greyish brown down, and are reared upon small mollusea, worms, eggs, and similar delicacies, disgorged from the parents' crop; at a later period they are supplied with half-digested fish or flesh, or sometimes with young birds. When able to provide for themselves, they are said to eat berries of different kinds. By the end of August they have attained their full growth, and in September are able to fly out to sea. The Common Skua is easily tamed, and in some places, says Mr. Dunn, is a great favourite with the fishermen, frequently accompanying their boats to the fishing-ground; this the fishermen consider a lucky omen, and in return for its attendance they give it the refuse of the fish which are caught, or supply it with any useless garbage from their nets.

BUFFON'S OR THE PARASITE SKUA.

BUFFON'S or the PARASITE SKUA (*Lestris* [*Stercorarius*] *parasitica*) is considerably smaller, and more slenderly built, than the species last described, from which it is also distinguishable by the central tail-feathers. These are considerably elongated and sharp-pointed. The colour of this bird is either sooty brown, with a white throat, and a whitish or yellowish patch upon the forehead, or the upper side is sooty brown, the throat yellowish, the under side greyish white, and the region of the crop grey. This variation in the colours of different specimens seems quite independent either of age or sex. The eye is brown, beak black, cere dark leaden grey, and the foot blue-black. The length is eighteen to nineteen inches; breadth, thirty-nine to forty-two inches; length of wing, twelve inches; length of tail, seven inches. The Parasite Skua is met with in the Arctic Regions of both hemispheres. It is found in Spitzbergen and Greenland, extending thence to the middle of the coast of Norway; it occurs in Iceland; in the islands to the north of Scotland; in the Faroe Islands; off the coast of Labrador; in Newfoundland; also in Behring's Straits; and in the Sea of Ochotsk it is abundant. In England and Ireland it is but rarely seen. During the winter it is a regular visitant to the more southern coasts of the countries bordering on the North Sea, and sometimes wanders inland. Except during the breeding season, it passes its whole life on the sea. Its presence is by no means confined to coasts and rocky reefs; it remains for weeks together far out of sight of land.

The unpractised observer will find but little difficulty in distinguishing the Parasite Gull, even from its nearest allies, as soon as he has witnessed the manner of its flight. Its gait when walking is hurried, but is not otherwise remarkable, and when swimming, with the exception of its dark colour, it very much resembles some of the smaller Gulls. Its flight, however, is more versatile than that of any member of the family; frequently it skims along like a Falcon, at one time giving a few rapid strokes with its wings, then sweeping onwards to a considerable distance, somewhat after the manner of a Kite; suddenly, however, it seems to shiver, or rapidly shake its wings, and precipitates itself downwards, describing a sort of arch, mounts up again, and immediately adopts a course made up of an alternation of larger and smaller arches joined beneath each other. It now shoots with great rapidity downwards, then slowly mounts again, and remains for a moment quiet, as it were exhausted; but the next instant, as though possessed by an evil spirit, it turns, and winds, and struggles, and flutters in an indescribable manner.

The cry of these birds somewhat resembles that of a Peacock. In their disposition they very closely resemble the Common Skua; they are bold, importunate, and valorous, but covetous, gluttonous, and thievish. In one respect, however, they differ from the Skua in a striking manner—they are remarkably social, and are at all times to be met with in little companies. During the breeding season they assemble in still greater numbers, but arranged in pairs, each of which builds its nest a little removed from the others, within a small territory of its own. These birds are as much feared by the smaller Gulls as the Great Skuas are by the larger ones, and yet, strange to say, Plovers, Snipes, and Oyster-catchers may be seen building in their immediate vicinity without the slightest indication of mistrust.

Upon several occasions we have watched the Parasite Gulls for weeks at a time, and by so doing have ascertained that during the middle of summer they are quite as active in the night-time as during the day. They have often appeared to us to be busied for hours together catching insects, but we have never found anything but the remains of fishes in their stomachs. The birds that they principally follow for the sake of making them disgorge any prey that they have swallowed are Gulls, Petrels, Terns, and Guillemots. The booty, however, that they obtain in this summary manner can scarcely form the staple of their food. They may be seen wandering along the beach, picking up worms and

remnants cast up by the waves quite as often as they are employed in pursuing other birds. About the middle of May the Parasite Gulls make their appearance on dry land for the purpose of rearing their progeny. The places selected for the nests are generally low-lying moors and high rocks; according to our own experience, they always avoid extensive moors. Fifty or a hundred of their nests may be sometimes counted in these settlements; each pair, however, seems to claim the vicinity of their nest as their own ground, from which they drive away intruders even of their own species. The nests are situated upon the top of small hillocks of earth, and consist of simple but carefully formed excavations. Their eggs, which are seldom laid before the middle of June, are smooth and somewhat polished; their colour is a dingy olive, or brownish green, speckled, streaked, and dotted with dark grey, dark olive, or reddish brown. Naumann is of opinion that the Parasite Gulls only lay two eggs; we, however, have repeatedly found three in the same nest. The two sexes brood by turns, and tenderly watch over their young. Should a man approach the nest, they at once hasten to meet the intruder; they fly round in circles, throw themselves on the ground before him to distract his notice, always, of course, managing to get out of the way should he try to catch them. They show themselves on these occasions quite experts in dissimulation, hop and flutter on the grass as if they were wounded—in short, do everything in their power to tempt their enemy from the locality. The early life of the young birds differs in no important particular from that of their congeners already described.

ROSS'S ROSY GULL.

ROSS'S ROSY GULL (*Rhodostethia rosea* or *Rossii*), the most beautiful Gull with which we are acquainted, is a resident in America, where it inhabits the far north. Upon some occasions, however, it has been known to visit Europe, and consequently deserves notice, although we are ignorant of any important particulars in which it differs from others of its race. This species is distinguishable by its wedge-shaped tail, the two middle feathers of which project nearly an inch beyond the rest; from this circumstance it is regarded as the representative of a distinct section of the family. Its beak is feeble, and the angular enlargement of the front of the under jaw, so characteristic of the Gulls, scarcely perceptible. The tarsus is moderately strong, and the four-toed foot of a medium length. The coloration of the feathers is more delicate and beautiful than that of any other of the race; the mantle is pearly or silvery grey; the under neck, breast, and belly are pale rose-red; the middle of the neck is adorned with a narrow black band, somewhat resembling a necklace of jet. The exterior web of the first quill is black, that of all the others white. The eyelids and throat are reddish yellow, the beak black, the foot scarlet. The length of this bird is fourteen inches; the length of the wing ten inches and a half; and of the tail five inches and a half. The Rosy Gull is included among British birds, a specimen having been killed upon a ploughed field in Yorkshire in 1847. Yarrell tells us that its flight resembles that of its congeners, and that it did not appear at all shy.

The PETRELS, or STORM-BIRDS (*Procellariæ*), are distinguishable among all other sea-birds, and, indeed, among all birds whatever, by the circumstance that their nostrils are represented by horny tubes, situated upon the upper beak.

The ALBATROSSES (*Diomedæ*), although by no means the noblest among this extensive group, seem to claim the precedence on account of their prodigious size and imposing aspect. These birds are recognisable by their great stature, powerful build, short thick neck, large head, and long beak, the latter being strong, compressed at the sides, and terminating in a formidably hooked tip. For some distance from its commencement the culmen is slightly bowed inwards, and the cutting edges are exceedingly sharp. The nostrils terminate in short horny tubes, that lie side by side upon the upper

aspect of the beak, and from these deep channels are prolonged quite to its extremity. The tarsus is short, but strong, the foot three-toed, and very broadly-webbed. The wings are very long, but remarkably narrow, the primary quills long and strong, the first quill being the longest; the secondary quills, on the contrary, are remarkably short, scarcely projecting beyond the wing-covers. The tail, which consists of twelve feathers, is short, either straight, or slightly rounded or pointed at its extremity. The general plumage is uncommonly rich, thick, and downy, but not striking in its coloration, which seems to vary in the two sexes and at different ages, as well as according to the seasons of the year.

The Albatrosses claim the vast ocean of the southern hemisphere as their habitat; both the *D. exulans* and the *D. chlororhynchus*, it is true, have been occasionally seen even off the coasts of Europe, but such a circumstance can only be regarded as an accidental occurrence. They seldom or



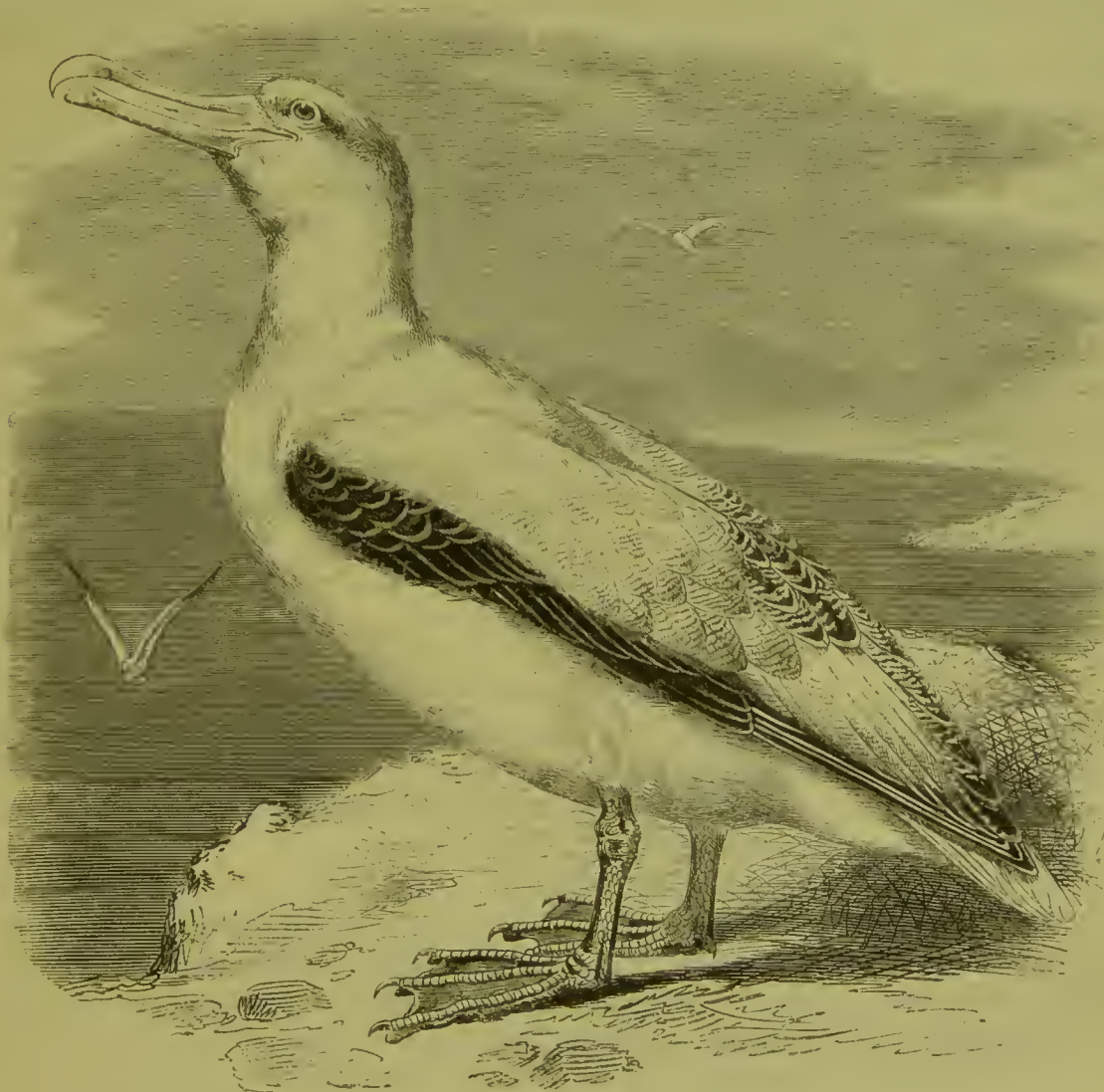
THE ROSY GULL (*Rhodostethia rosea*).

never pass beyond the tropic of Capricorn, at least in the Atlantic, and even then only as occasional wanderers. They appear more frequently, however, in the northern regions of the Pacific Ocean; they are also said to make regular visits to Behring's Straits and the Sea of Ochotsk, and not only casually to show themselves upon those unfrequented shores, but to reside in their vicinity during several months, only retiring beyond the equator as the season for breeding approaches. In like manner they are frequently met with in high antarctic latitudes, *i.e.*, as we are informed by sailors and fishermen, up to 50° or 60° south latitude; but whether these visits are regular migrations, or merely casual excursions, we are not as yet informed. We know, however, that they visit all seas lying between 23° north, and 66° south latitude; that when they come into more northern climes, as into Kamschatka and Ochotsk, they are hungry, lank, and half-starved, but that in a few weeks, owing to the abundance of food they there meet with, they return to their breeding-places plump and in good condition. It is said by some observers that in the literal meaning of the words their flight extends quite around the

globe, being generally, however, more or less restricted within the limits of a certain zone, from which they never wander far during the whole course of the year, and within which they likewise breed.

THE WANDERING ALBATROSS.

The WANDERING ALBATROSS (*Diomedea exulans*), called by some the Cape Sheep, is, with the exception of its black wings, entirely pure white. In young birds the plumage is banded and marked



THE WANDERING ALBATROSS (*Diomedea exulans*). ONE-FIFTH NATURAL SIZE.

with various shades of brown. The eye is dark brown, the naked eyelid pale green; the bill is reddish white, with yellow tip; and the foot yellowish white. According to measurements made by Bennett, this species is three feet ten inches long, and the spread of the wings eleven feet eight inches; this latter measurement is, however, subject to variation, some being not more than ten feet, and others as much as fourteen feet across the wings.

The habitat of the Wandering Albatross is confined within no particular limits, it is, however, most abundant between 30° and 60° south latitude, and is equally numerous in all parts of the Southern Ocean. The wide ocean is its natural range, and this it never leaves except for the purpose of breeding, when it usually resorts to inaccessible rocky islands.

"The powers of flight of the Wandering Albatross," says Gould, "are much greater than those of any other bird that has come under my observation. Although during calm or moderate weather it sometimes rests on the surface of the water, it is almost constantly on the wing, and is equally at ease while passing over the glassy surface during the stillest calm, or flying with meteor-like swiftness before the most furious gale." Although a vessel running before the wind frequently sails more than 200 miles in twenty-four hours, and that for days together, still the Albatross has not the slightest difficulty in keeping up with the ship, but also performs circles of many miles in extent, returning from these excursions to the wake of the vessel in order to obtain any substances thrown overboard.

"It is pleasing," writes Bennett, "to observe this superb bird sailing in the air in graceful and elegant movements, seemingly excited by some invisible power, for there is rarely any movement of the wings seen after the first and frequent impulses given when the creature elevates itself in the air; rising and falling without any muscular exertion of its own, and then descending, sweeps the air close to the stern of the ship with an independence of manner as if he were monarch of all he surveyed. It is from the very little muscular exertion used by these birds that they are capable of sustaining such long flights without repose. When seizing an object floating on the water, they gradually descend with expanded or upraised wings, or sometimes alight and float like a Duck on the water while devouring their food; then elevating themselves, they skim the ocean with expanded wings, giving frequent impulses, as the great length of their wings prevents their rising with facility from a level surface, as they run along for some distance until they again soar in mid-air, and recommence their erratic flights." Like other species of the genus, this Albatross is nocturnal as well as diurnal in its habits; no bird takes so little repose; indeed, it appears to be constantly on the wing, scanning the surface of the ocean for the molluscs, medusæ, and other marine animals that constitute its food. The Wandering Albatross breeds in the rocky islands of the Southern Ocean during the months of November and December. The grass-covered declivities of the hills, above thickets of wood, are the spots usually selected for its nest, which consists of a mound of earth intermingled with grass and leaves. The nest is about eighteen inches high and six feet in circumference at its base, whilst the opening at the top is about twenty-seven inches in diameter. The eggs are white, and from fourteen and a half to nineteen ounces in weight.

"The Albatross," says Dr. McCormick, "frequently sleeps with its head under its wing during the period of incubation, its beautiful white head and neck above the grass betraying its situation from a considerable distance. If approached, it resolutely defends its egg, and if forced off the nest, slowly moves away to a short distance, but does not take wing. A fierce species of *Lestris* watches keenly for any opportunity of seizing the eggs, and so well aware is the Albatross of its hostile intentions, that he snaps his beak violently whenever he observes the *Lestris* overhead." The female usually lays but one egg; the young bird is entirely white, and covered with a beautiful woolly down.

THE YELLOW-BILLED ALBATROSS.

The YELLOW-BILLED ALBATROSS (*Diomedea chlororhynchus*) is smaller than the above species. In the adult birds the plumage is principally white with brownish black rump and wings of the same colour; the tail-feathers are brownish grey shafted with white; the bill is black with orange-red culmen.

This species is abundant off the Cape of Good Hope, and also in the seas between the African shores and Tasmania. Gould observed it off Capes Howe and Northumberland on the southern coast of Australia, and Gilbert tells us that he saw it flying on the western coast about Rottnest Island, in short, its presence may be expected throughout the temperate zones of the southern hemisphere.

THE SOOTY OR BLACK ALBATROSS.

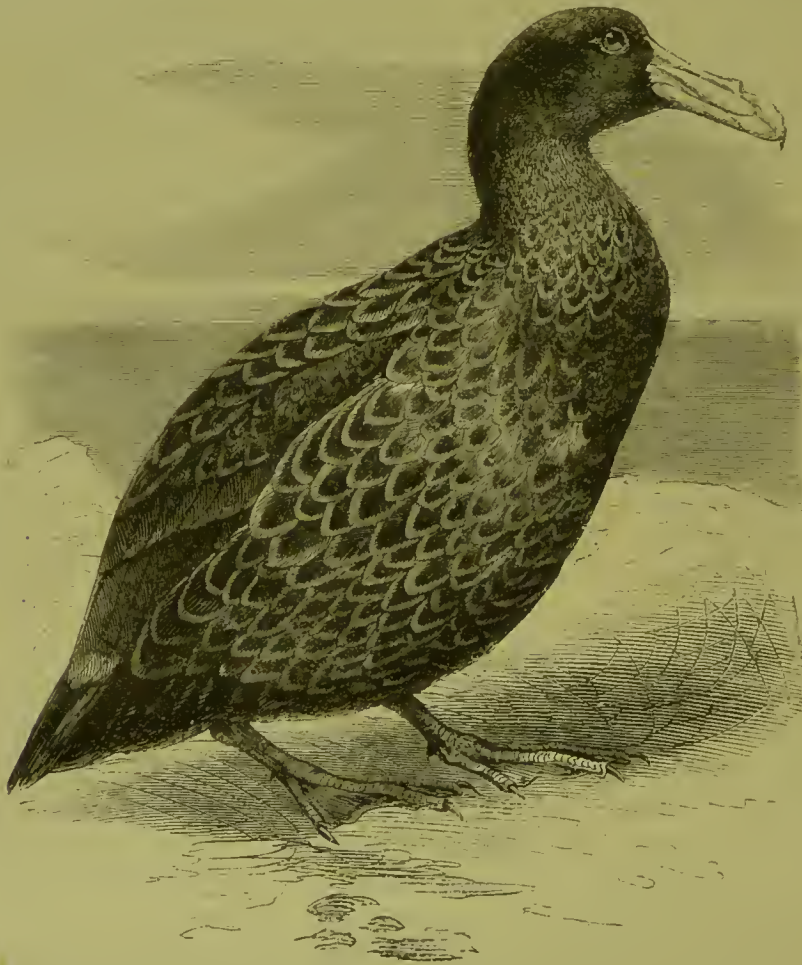
The SOOTY OR BLACK ALBATROSS (*Diomedea* or *Phæbætria fuliginosa*) is principally of a dark sooty grey; the head and wings are brown. In this species the tail is wedge-shaped.

The Sooty or Black Albatross, one of the commonest species, is universally spread over all temperate latitudes south of the equator. According to Latham, these birds breed on the Island of Tristan d'Acunha, and are gregarious, many of them building their nests close to each other; in the area of half an acre were reckoned upwards of a hundred. The nest is of mud, raised five or six inches, and slightly depressed at the top; when the young are more than half-grown they are covered with a whitish down; they stand on their respective hillocks like statues, until approached close, when they make a strange clattering with their beaks, and if touched squirt a deluge of fetid oily fluid from the nostrils. "The Black Albatross is common," says Layard, "along the south coast of Africa, at a little distance from the land. It is fond of hovering over a ship's deck, and I have obtained specimens by sending a small rifle bullet through them, thus killing them instantly; if struck with shot, their feathers are so dense that they seldom receive a death wound, but drift seaward and perish miserably. I have never observed any of the other Albatrosses hover over the deck as this bird constantly does; I have seen it almost touch a man on the royal yard. On these occasions it seems actuated by curiosity, and keeps turning its head from side to side, scanning everything with its brilliant dark eye." The eggs of this species resemble those of *D. exulans*, but are somewhat smaller, being about four inches two lines long by two inches six lines broad.

All the birds belonging to this family are oceanic, nevertheless each species seems to confine its occupancy within certain zones or climates. They are less numerously met with in the torrid zone than in the more temperate and colder regions, and are more abundant in the southern than in the northern hemisphere. During the breeding season they resort to the coasts, but the greater part of their life is spent upon the open sea. They can scarcely be said to walk, but they swim with ease and buoyancy, still they seldom alight upon the water, passing by far the greater part of their lives upon the wing. From the deck of a ship they may be seen pertinaciously accompanying it for whole days together, sweeping constantly along with an unbroken equable pace, mounting gently over the crests of the highest waves, plunging headlong into the valleys between them, only staying their course now and then for a moment, to enable them to pick up any stray morsel thrown from the ship, or seen floating upon the water. They are less capable of diving than most other sea-birds, probably from the difficulty they must encounter in submerging their soft thick plumage. They are even more saucily obtrusive than the Albatrosses, and will fearlessly seize upon any proffered bait, even when they have seen their fellow caught with a hook and line. Their food, besides fishes, consists of any animal substances that may be found floating on the waves. Their voracity is almost insatiable; with the prospect of a feast before them, they think nothing of danger, and will even allow themselves to be knocked down with sticks, or caught with the hand. The Petrels breed in the vicinity of the sea, generally upon solitary and almost inaccessible rocks. They can hardly be said to make a nest, but lay their eggs on the bare ground, and immediately commence the work of incubation. Their eggs are broad in proportion to their length, coarse-shelled, and of a pure white, without any markings. The young when hatched are covered with grey down; they grow very slowly, but are carefully tended by their parents, who defend them by ejecting fetid oil from their crops in the face of the assailant. After the young are able to fly, the families distribute themselves over the surface of the sea. They are sociable birds, and may sometimes be seen keeping together in considerable flocks.

The TRUE PETRELS (*Procellariæ*) in their general appearance present a certain resemblance to

the Sea Gulls, from which, however, they are easily distinguished by their rounder head, high forehead, and smaller wings. The Petrels are powerfully built, short-necked, and large-headed; their beak is shorter than the head, strong, hard, and so deeply furrowed upon the sides that its point seems a mere appendage fastened to it, forming at the extremity of the upper jaw a strongly-bent hook, and upon the under jaw a peculiarly-formed angular termination. The cutting edges of the mandibles overlap each other and are very sharp; the gape opens backwards as far as the eye; the apertures of the nostrils are situated in a horny pipe consisting of two tubes consolidated into one in such a manner that the longitudinal division between them is perceptible; the foot is moderately strong, the tarsus



THE GIANT PETREL (*Procellaria* [*Ossifragus*] *gigantea*). ONE-SIXTH NATURAL SIZE.

short and compressed laterally, the three front toes are connected together by a well-developed swimming web, but the hinder toe is only represented by a little rudimentary appendage. The wings are very similar to those of Sea Gulls, but are shorter and more pointed, the first quill being invariably longer than the rest. The tail, which consists of twelve or fourteen feathers, is more or less rounded at the extremity. The general plumage is rich, and thicker above than below, indeed, on the under part it is very soft and fur-like. The two sexes are alike in colour, and even the young differ but slightly from the old birds, neither do their colours alter perceptibly with the seasons.

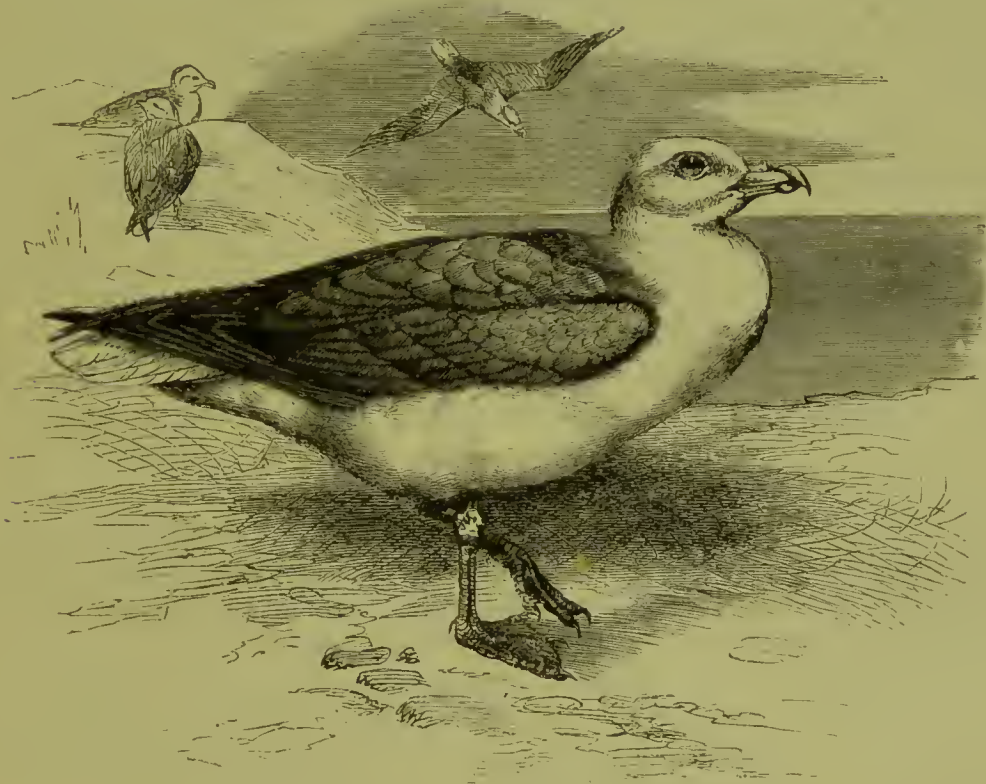
THE GIANT PETREL.

The GIANT PETREL (*Procellaria* [*Ossifragus*] *gigantea*) may be regarded as holding a position

intermediate between the Albatross and the Storm Petrels. In this bird the plumage is deep chocolate-brown. The eye is blackish brown; beak horn-grey, with red tip. The young bird is more lightly coloured, and has a silvery white eye. The length of this species is about two feet eight inches, and the spread of the wings from four feet and a half to five feet.

The habitat of the Giant Petrel extends over the temperate and antarctic zones of the southern hemisphere.

Captain Hutton tells us that "this bird breeds in the cliffs of Prince Edward's Island and Kerguelen's Land, but the nests can be got at occasionally. The young are at first covered with a beautiful, long, light grey down; when fledged they are dark brown, mottled with white. When a



THE FULMAR PETREL (*Procellaria glacialis*).

person approaches the nest, the old birds keep a short distance away, while the young ones squirt a horribly-smelling oil out of their mouths to the distance of six or eight feet. It is very voracious, hovering over the sealers when engaged cutting up a seal, and devouring the carcase the moment it is left, which the Albatross never does. It sometimes chases the smaller species, but whether or not it can catch birds possessed apparently of powers of flight superior to its own is doubtful; but supposing one is killed, that it feeds only upon its heart and liver, I can never believe, yet it is said to do so in the works of many ornithologists."

THE FULMAR PETREL.

The FULMAR PETREL (*Procellaria glacialis*) is principally white, light silvery grey upon the under side, and blueish grey upon the mantle. The primary quills are black, the eye is brown, the beak along the culmen pale horn-yellow, at its base greyish green. The foot is yellow, with a shade of blue. In young birds the plumage on the under side of the body is slightly blueish. The length of this

species is eighteen or nineteen inches, its breadth forty-one to forty-three inches, the length of its wings twelve to thirteen inches, length of tail four inches and two-thirds.

The Fulmar Petrel lives in the Arctic Ocean, from which it rarely strays, unless driven away by violent storms. In more southern seas it is represented by a kindred species resembling it so closely that the two were often mistaken for each other. The Island of St. Kilda, and Grönso near Iceland, are looked upon as its most southern breeding-places. Like all its kindred, it is an inhabitant of the wide sea, and, except during its breeding season, only comes to dry land when lost and bewildered by a fog, or wearied out by the long continuance of a storm. In North Greenland it is said to be seen oftener than elsewhere upon the coasts, and in the bays and harbours. Their specific name *glacialis* has not been very happily given to these birds, as they seem to avoid rather than seek large accumulations of ice ; indeed, all pilots hold their presence to be a sure sign of open water. The flight of this Petrel very much resembles that of the Ivory Gull. The sailor gazes with admiration as he sees it with outspread, almost motionless wings, glide like a meteor over the waves or battling with the storm for days together, apparently without allowing itself the slightest repose. It seems to have not the slightest fear of man ; it approaches ships with the utmost confidence, and is rather importunate in its visits to the whale-fishers, more especially should they be engaged in cutting up a whale.

"The Fulmar," says Captain Scoresby, "is the constant companion of the whale-fisher. It joins his ship immediately on passing the Shetland Islands, and accompanies it through the trackless ocean to the highest accessible latitudes. It keeps an eager watch for every thing thrown overboard ; the smallest particle of fatty substance can scarcely escape it. Though few should be seen when a whale is about being captured, yet, as soon as the flensing process commences, they rush in from all quarters and frequently accumulate to many thousands in number. They then occupy the greasy track of the ships ; and, being audaciously greedy, fearlessly advance within a few yards of the men employed in cutting up the whale. It is highly amusing to see the voracity with which they seize the pieces of fat that fall in their way ; the size and quantity of the pieces they take at a meal ; the curious chuckling noise, which in their anxiety for dispatch, they always make ; and the jealousy with which they view, the boldness with which they attack, any of their species that are engaged in devouring the finest morsels. When carrion is scarce, the Fulmars follow the living whale, and sometimes by their peculiar motions when hovering at the surface of the water, point out to the fisher the position of the animal of which he is in pursuit. They cannot, however, make much impression on the dead whale until some more powerful animal tears away the skin, for this is too tough for them to make their way through."

In high latitudes the Fulmars build their nests in every available island, as far south as St. Kilda. Upon the Westmanoer, near Iceland, its nests are more numerous than those of any other birds that breed in that vicinity ; some estimate of the numerous flocks in which it visits those parts may be formed from the numbers killed, amounting annually, as Faber informs us, to at least 20,000. Their numbers seem to be steadily on the increase, in spite of the persecution to which they are subject. Their nests are very generally placed beyond the reach of the bird-catchers, notwithstanding that they are let down by ropes when in search of them, and pursue them upon every ledge and in every crevice to which they can possibly find access. The Fulmar Petrel begins to congregate around its breeding-places in March, about the beginning of May, or sometimes towards the middle of April ; each pair lays a single egg, which is round, of a pure white colour, either upon the bare surface of the rock, or in some slight depression made or discovered in the scanty soil.

The Fulmar Petrel is only a rare visitor to England, but it frequents in great numbers the islands of St. Kilda and Borrera ; it is said also to breed in some of the islands of the Hebrides.

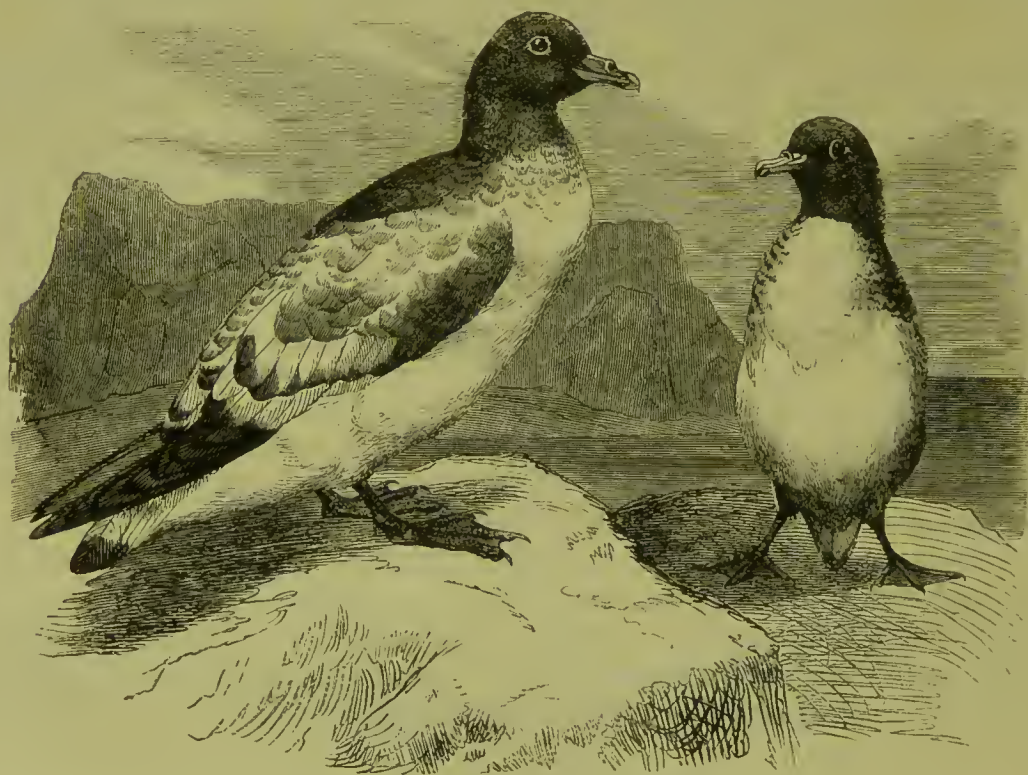
Mr. John Macgillivray, who visited St. Kilda, its principal breeding-place, in June, 1840, gives the following account :—

“This bird exists here in almost incredible numbers, and to the natives is by far the most important of the productions of the island. It forms one of the principal means of support to the inhabitants, who daily risk their lives in its pursuit. The Fulmar breeds on the face of the highest precipices, and only on such as are furnished with small grassy shelves, every spot on which, above a few inches in extent, is occupied with one or more of its nests. The nest is formed of herbage, seldom bulky, generally a mere excavation in the turf, lined with dried grass, and the withered tufts or the sea-pink, in which the bird deposits a single egg of a pure white colour, when clean, which is seldom the case, and varying in size from two inches seven lines to three inches one line in length, by two inches in breadth. On the 30th of June, having partially descended a nearly perpendicular precipice, six hundred feet in height, the whole face of which was covered with the nests of the Fulmar, I enjoyed an opportunity of watching the habits of this bird, and describing them from personal observation. The nests had all been robbed about a month before by the natives, who esteem the eggs of this species above all others. Many of the nests contained each a young bird, a day or two old at farthest, thickly covered with long white down. The birds were very clamorous on being handled, and vomited a quantity of clear oil, with which I sometimes observed the parent birds feeding them by disgorging it. The old birds on being seized instantly vomit a quantity of clear amber-coloured oil, which imparts to the whole bird, its nest, and young, and even to the rock it frequents, a peculiar and very disagreeable odour. Fulmar oil is the most valuable production of St. Kilda. The best is obtained from the old bird, by surprising it at night upon the rock, and tightly closing the bill until the fowler has secured the bird between his knees, head downwards. By opening the bill the Fulmar is allowed to disgorge about a tablespoonful of oil, or rather more, into the dried gullet and stomach or a Solar Goose, used as a reservoir for that purpose. These receptacles when filled are secured with a string and hung on cords across the interior of the huts until required for use. Besides supplying their lamps, this oil is used by the inhabitants of the island as a medicine. In the beginning of August the natives descend the rocks for young Fulmars, which are then nearly fledged, and, by boiling in water, are made to furnish a large quantity of fat, which is skimmed off and preserved in a solid form. The old Fulmar is much esteemed by the St. Kildians, on account of its subcutaneous covering of fat, of which they are immoderately fond.”

THE CAPE PETREL.

The CAPE PETREL (*Procellaria* or *Daption Capensis*) is another species well known to mariners, as it has been recently killed in Europe. The length of this bird is fourteen and its breadth thirty-two inches. Its plumage may be described as white, variegated with black upon the mantle in such a manner that without much stretch of fancy it might be compared to the black and white squares of a chessboard; the greater part of the upper surface is soot-black, or black speckled with white; the under surface is white; the quills and tail-feathers tipped with black at their extremities. The geographical distribution of these birds is remarkable. In the Atlantic Ocean they are only to be met with beyond the tropic of Capricorn, and it is a very rare occurrence to see one of them within the limits of the torrid zone, or in any part of the northern hemisphere. In the southern hemisphere, on the contrary, they are very common, more especially upon the west coast of South America, as far north as the equator. If captured in fine weather, when the sea is smooth, and they are able to obtain their usual food, their stomach is found to contain little except the remains of the marine animals upon which they feed, small crustaceans, molluscs, and fishes; but during stormy weather, when they are unable to obtain their ordinary nourishment, they become so voracious that they will swallow almost anything. In the

stomachs of individuals captured by Tschudi during a continuance of bad weather, he found a most miscellaneous collection both of eatable and uneatable substances—beans, peas, and lentils, mutton bones, oakum, leather, slices of cabbage, leaves and ship-biscuits, pieces of wood, and, in short, everything that had accidentally fallen from the ship, or been intentionally thrown overboard. In fine weather the Cape Petrels appear to be shy and distrustful; but during a storm, driven apparently by hunger, they become positively reckless, and are very easily captured. The way in which, under these circumstances, they are caught by sailors is simple enough; a bent pin is tied to the end of a strong string, to serve as a hook and line, a piece of bread or bacon is used for bait, and no sooner is this thrown overboard than it is seized upon by a bird, which, by a well-timed jerk of the string, becomes hooked through the upper jaw, and is at once pulled on board. In very stormy weather it naturally



THE CAPE PETREL (*Procellaria* or *Daption Capensis*). ONE-FOURTH NATURAL SIZE.

happens that so light a bait never reaches the water, but is suspended fluttering in the wind; yet even under these circumstances they will fly at it with the utmost avidity, and if not caught by the hook, generally become so entangled by the string that they are unable to escape. When drawn into the ship they defend themselves valiantly with their beak, and moreover have an ugly trick of squirting from their mouth right into the face of their enemy a loathsome, stinking, oily fluid, which certainly to some extent avenges them for the treatment they experience. When killed, they are skinned by the sailors, and their skins made into weathercocks, the only use to which they seem to be applicable.

"This Martin among the Petrels," says Gould, "swims lightly; but it rarely exercises natatorial power except to procure food, in pursuit of which it occasionally dives for a moment or two. Nothing can be more graceful than its motions when on the wing, with the neck shortened and the legs entirely hidden among the feathers of the under tail-covers. Like the other Petrels it ejects when irritated an oily fluid from the mouth. Its feeble note of 'Cac, cac, cac, cac,' is frequently uttered;

the third, according to Captain Hutton, being pronounced the quickest." We learn from Tschudi and Gould that this species breeds on rocky islands at no great distance from the shore; but with this exception we are without reliable particulars respecting its nidification.



STORM PETRELS.

THE BROAD-BILLED PRION, OR DUCK PETREL.

The BROAD-BILLED PRION, or DUCK PETREL (*Prion vittatus*), together with another species, which like itself is peculiar to the southern hemisphere, constitute a little family apart, to which the

name of Duck Petrels would not be inapplicable. The most distinctive character met with in this bird is that the margin of the upper jaw is furnished with small, thin, tooth-like processes, arranged in the same manner as in some species of Ducks, and answering a similar purpose. The wings are long and strong, the first quill being somewhat shorter than the second. The tail, composed of twelve feathers, is broad and bluntly rounded, the two central feathers being perceptibly longer than the rest. The colour of the plumage is light greyish blue upon the back, and pearl-white on the under surface; the back and shoulder-feathers are darker than the rest of the body. The border of the wing and the points of the tail-feathers are black. The eye is brown, the beak dark grey, and the foot dark greyish blue. The length is ten inches and a quarter, breadth twenty-two inches, length of wing six inches and one-third, length of tail three inches and a half.

These birds are met with upon the coast of Brazil; their range extends from the tropic of Capricorn to the equator; the region that they frequent abounding in rugged rocks and small islands, upon which they probably find their breeding-places. They seem to be much more numerous in the Pacific Ocean than in the Atlantic. According to Tschudi's observations they are seldom seen swimming on the ocean, their flight being of a more sustained character than that of the Petrels generally. According to Gould, this species closely resembles the *P. Banksii* in its powers of flight and mode of life. Of this latter he says: "Sometimes it appeared in countless multitudes, but more often thinly dispersed over the surface of the ocean. During calms it flits over the glassy waters with a noiseless but easy flight, often performing small circles and fluttering butterfly-like over any oily substance thrown overboard, which it sips off the surface without settling; occasionally, however, it rests its buoyant and fairy little body on the waters, where it reposes at perfect ease, until hunger again impels it to take wing in search of food. A more vigorous and active action of the wing being necessary to sustain it during the raging of the gale, it then moves with zigzag turns of great swiftness, ascending the billows, topping their surgy summits, and descending into the gulf between, where a momentary shelter enables it to gain fresh vigour and seize from the slanting surface any molluscs that may present themselves, and which from the disturbed state of the sea are apparently then more abundant than at other times."

The STORM PETRELS (*Oceanides*) constitute a well-defined group, distinguishable by the smallness of their dimensions, their slender body, short neck, and moderately large head, as also by the long Swallow-like formation of their wings, in which the second and third quills are longer than the rest; their tail is of moderate length, composed of twelve feathers, and either nearly straight or forked at its extremity; the beak is small, weak, and straight, except at the extremity, where both mandibles curve downwards, the end of the upper one being decidedly hooked; the tarsus is long, slender, and feeble, and the foot furnished with three strong toes, which are united by a broad and very complete web, while the hind toe is nothing more than a wart-like rudiment. The plumage is thick and fur-like, and the colour generally a dusky blackish brown, more or less enlivened with white.

The Storm Petrels are met with in all parts of the world, with the exception of very high southern or northern latitudes. Where one species becomes scarce, another supplies its place, and occasionally two or more species will be found inhabiting the same regions of the ocean. Thus four or five at least occupy the vicinity of the coasts of Europe, and at least double that number are to be met with near the shores of the American continent, whilst in the Pacific Ocean they seem to be particularly numerous. In their usual habitat, that is, in the wide sea, the Storm Petrels live in a constant state of activity, and may be seen flying about during the entire day, and heard throughout the night. Occasionally they may be seen disporting themselves singly, but more generally they make their appearance in small or more numerous companies, during fine as well as in stormy

weather. All day long they are occupied in flying over the waves, the risings and fallings of which they exactly follow, or in mounting high in the air like Swallows, whence they descend again, as though about to plunge into the water, but rise again without touching it. Sometimes again they settle down upon the water, and remain motionless, as if unable to move from the same spot, though all around them is in constant agitation and turmoil. When flying they make but few strokes with their wings, but these are obviously very effective, and their action much diversified. Sometimes they may be seen with their wings widely expanded, and in this manner they sail along for minutes together, without the slightest effort, then, suddenly bestirring themselves, a few quick powerful strokes given after the manner of a Swift, raise them above the waves, where they astonish the observer by the masterly precision of their evolutions, as they shoot down obliquely over the billows, or mount up again high into the air. Should they espy anything in the shape of food, they at once hasten towards it, running upon the water, and, having seized it with their beak, immediately resume their aerial pastime. As to their powers of swimming, they seem so seldom to adopt that mode of locomotion, that many careful observers declare that they never swim at all, but that they only sit down, as it were, and float on the sea, without ever using their legs as instruments of propulsion. Their strength of wing is wonderful; they literally fly about all day long without resting at all. It is only after the long continuance of a storm that they seem to be wearied, and yet even this fatigue is not produced by their exertions in battling with the wind, but because, during the violence of the tempest, they are unable to obtain their usual supply of food, and consequently are exhausted for want of nourishment. Their voice is seldom heard in the daytime, which in truth appears to be to them the season of repose; it is in the evening, shortly after the sun has gone down, that they seem most active and alert; at that time, should the wind permit, their call-note may be frequently heard. In disposition they are particularly harmless, living in perfect good-fellowship with each other, and appearing to care little about other birds. Their food consists of all sorts of soft-bodied animals, picked up from the surface of the ocean; but we are unable to say more upon this subject. The stomachs of such as have been examined invariably contained nothing but a fluid resembling train-oil, but never the slightest trace of animal remains.

THE COMMON STORM PETREL.

The COMMON STORM PETREL (*Thalassidroma pelagica*) has the end of the tail very slightly rounded. The general colour of this species is a sooty brown; the upper part of the head is of a glossy black, becoming browner towards the forehead, and the mantle blackish brown. The wing-covers have white points, and the rump is likewise white. The eye is brown, beak black, and foot reddish brown. This species is five inches and a quarter long, and twelve inches and a half broad; the length of the wing is four inches and a half, and tail two inches. The Storm Petrel, though not generally distributed over the coast of Great Britain, is indigenous, breeding in Shetland, the Orkneys, and the islets on the Irish coast. During severe gales individuals have been shot as far inland as Berks, Warwickshire, and Derbyshire.

Mr. Hewitson gives the following account of the breeding of the Petrels in Shetland:—“On the 31st May these birds had not arrived on the breeding-ground; to use the phrase of the fishermen, ‘Had not yet come up from the sea.’ Some eggs were deposited as late as the 30th June. In Foula they breed in the holes in the cliff at a great height above the sea; but here (in Oxnà) under stones which form the beach, at a depth of three or four feet or more, according to that of the stones, as they go down to the earth beneath them, on which to lay their eggs. In walking over the surface I could hear them very distinctly singing in a sort of a warbling chitter, a good deal like Swallows, when fluttering above our chimneys, but harsher; and in this way, by listening attentively, was guided to their retreat; and, after throwing out stones as large as I could lift on all

sides of me, seldom failed in capturing two or three seated on their nests, either under the lowest stone, or between two of them. The nests, though of much the same materials as the ground on which they were placed, seemed to have been made with ease. They were of small bits of stalks of plants and pieces of hard dry earth." Like the rest of the genus, the Storm Petrel lays invariably one egg only. During the daytime they remain within their holes, and though the fishermen are



THE COMMON STORM PETREL (*Thalassidroma pelagica*). ONE-HALF NATURAL SIZE.

constantly passing over their heads, the beach under which they breed being appropriated for the drying of fish, they are then seldom heard, but towards night become extremely querulous, and when most other birds are gone to rest issue forth in great numbers, spreading themselves far over the surface of the sea. The fishermen then meet them numerously, and, though they have not previously seen one, upon throwing pieces of fish overboard are sure to be surrounded by them; the sharpness of their vision enabling them to see food from afar, which, from the activity of their movements, they are not long in appropriating.



BOOBY

1851

LEACH'S STORM PETREL.

LEACH'S STORM PETREL (*Oceanodromus Leachii*) differs from the previous species in having its tail deeply forked; it is, moreover, of much larger size, its length being eight inches, and breadth nineteen inches; the wing measures six inches and three-quarters, and tail three inches and a half. The plumage is of a blackish brown on the head; the rump is white; and the ends of the wing-coverts fawn-colour. This species also occupies the Atlantic Ocean, and precisely resembles the Common Petrel in its habits, manners, nidification, and food.

The PUFFINS (*Puffini*) are recognisable by their slender bodies, proportionately short wings, and more or less rounded tail, composed of twelve feathers. The beak is short, or of moderate length, and the nostrils divided. The legs are large, broad-footed, and placed very far backwards. The plumage is smooth and oily. The Puffins are eminently aquatic birds, only visiting the land for the purpose of hatching and rearing their young; nevertheless they often approach the shore or visit harbours on the coast. They are generally met with in little flocks consisting of from eight to twenty individuals, and employed in fishing for food. During the breeding season, however, they assemble in such vast numbers as almost to cover the rocks on which they build. Their food consists principally of fishes and molluscous animals, which are invariably caught by diving. The Puffins are distinguishable from all their allies by the impetuosity of their flight. Sometimes they may be seen swimming quietly upon the water and diving into the advancing waves; generally, however, they are observed flying, and not only shooting over but dashing through them. With outstretched wings they plunge into the billows, urging their career with rapid strokes, twisting and turning in the water, not only sideways but completely round, so that sometimes the dark-coloured back, sometimes the shining white under surface becomes visible; now they seem to follow the outline of the wave, climbing upon one side of it and plunging down the other as they suddenly emerge from the water, and, after rising ten or twelve feet into the air, once more plunge obliquely into the sea, where they again dive, rowing themselves along with feet and wings till, after making their way to a considerable distance, they come up into the air, apparently simply to take breath, and forthwith disappear in the same manner. The interest attaching to this spectacle is considerably increased from the circumstance of so many of the birds joining in these active evolutions, just as one plunges beneath the surface another emerges, and as they are all busily employed, it is difficult for the eye to follow their rapid evolutions.

Although the Puffins do not congregate around their breeding-places in such vast multitudes as other water-fowl, they regularly visit St. Kilda and other places among the Hebrides and Faroe Islands in very considerable numbers, generally arriving in the night, during which they appear to be even more active than in the daytime.

Like many other Divers, they dig, by means of their beak and claws, holes in the greensward with which their breeding-place is generally covered to the depth of two feet or even more; their excavations having more the appearance of rabbit-holes than of nesting-places for a bird; at the bottom they are slightly wider than elsewhere, and here they lay their eggs, without making any nest. Occasionally, however, they collect a few stalks of grass together, upon which their eggs are deposited. Not unfrequently they merely take possession of the holes prepared in preceding years. Their nesting-place being completed, each female lays a solitary egg, which is of large size. Upon this egg the male and female sit by turns for a very long period; how long has not yet been ascertained, but it extends over several weeks; if disturbed during their confinement, the parents become much excited, and defend their nests vigorously, uttering cries which have been compared to the

growling and yelping of young dogs, at the same time spreading out their tails and biting their opponent with their sharp bills. The young one when hatched is clothed in down, but although abundantly provided with food by both parents, its growth is anything but rapid; indeed, it is not until after the lapse of several months that it is able to leave its home and make its appearance on the surface of the sea. By this time it has been so well fed that its breast is covered with a layer of fat fully an inch thick; it is at this period that these birds are sought for and killed in great numbers, affording a most acceptable addition to the scanty fare of the inhabitants of the islands favoured by their presence.

THE MANX PUFFIN, OR SHEARWATER.

The MANX PUFFIN, or SHEARWATER (*Puffinus Anglorum*), is provided with a beak of moderate length, but narrow and weak, the upper mandible of which terminates in a sharp hook, which is received in a corresponding depression of the lower jaw which bends down at its extremity. The plumage of the adult bird is brownish black upon the upper parts of the body, and pure white upon the under side; the sides of the neck are marked with grey. The eye is brown, the beak grey, the foot greenish yellow. This species is fourteen inches long, and from thirty to thirty-two inches broad, the wing measures ten inches and the tail two inches and a half. At present it is uncertain how far the range of the Manx Puffin extends, for such is the similarity of colour in the different species, that they are doubtless frequently mistaken for each other by incompetent observers; we are, however, sure that it is met with as far south as the coasts of France and Spain, and has occasionally been seen on the shores of the Mediterranean. In Germany it is very common, and also makes its appearance in Heligoland every year with considerable regularity. It is also certain that this bird breeds in Iceland, the Hebrides, Shetland, Scilly, and Faroe Islands. A small island near the Calf of Man, although now deserted, was formerly inhabited by this bird in great numbers; it is also abundant on the coast of South Wales, in spring; occasionally it visits Iceland and the east coast of England. The Manx Puffin arrives in Great Britain about March, and departs in August, only resorting to the land during the breeding season, and selecting for the purpose of incubation small islands or rocky shores away from any haunts of man. At the commencement of this century the capture of the eggs and young afforded an important means of support to the poor and hardy inhabitants of the islands they principally frequent; and Mr. Low gives us the following account of the manner in which they were obtained:—"A man sitting on the brink of the rock with a coil of rope made of hair on his arm, will let his neighbour many fathoms over the steepest rocks, such as would make other people shudder to look at, and yet these men think no more of it than an airing; and though few years pass without some or other of them perishing, yet this never deters the survivors. It is really dreadful to see people let over a rock several hundred fathoms high, with the deep below them, supported only by the single arm of their comrades, who have nothing to rest themselves against. Sometimes, indeed, both slip together. In August the young are fit for taking, and are very much sought after as delicacies by those who love good cheer. They are indeed very fat, but are nauseously rank and fishy-tasted; however, they sell pretty high, and are lucrative to the captors. The country people salt them down for winter provision, and boil them with cabbage. They likewise take the old ones in March, but these are poor and not nearly so good as the young."

THE OAR-FOOTED SEA-FLIERS (*Steganopodes*).

THE members of this order present but a very distant resemblance to the swimming birds described in the preceding pages, from which they differ not only in the construction of their feet, but in their general appearance and peculiar habits.

The birds belonging to this division are characterised by having their body considerably elongated, their neck of moderate length, the head small, and the wings long and rounded or very long and pointed. The tail is variously constructed, but always peculiar and very pointed; and invariably there is between the branches of the under jaw a naked, more or less pouch-like, fold of skin. The tarsus is short and the toes long in correspondence with the great size of the web which connects *all* the toes with one another, a character whereby they are particularly distinguishable. The general plumage is thick; in some instances compact and stiff, but in others of silky softness. Its colour occasionally differs in the two sexes, and varies much at different ages.

The oar-footed races may all be called inhabitants of the sea, although but a single family is so decidedly oceanic that it never absents itself from the water. All the others willingly prolong their flight far inland, where many of them establish settlements; indeed, there are certain races that only exceptionally visit the sea at all; nevertheless, when they do find themselves in that element they are quite at home, and not only care little for the land, but are able to dispense with fresh water. Some of them at certain intervals come on shore to rest themselves or to sleep on rocky islands and coasts; others prefer a shelving shore; and others, whenever they get an opportunity, roost upon trees: certain species, indeed, might almost be considered true forest birds. In northern climates, as their breeding-time approaches, many of them migrate with great regularity; but in low latitudes they only remove hither and thither, northwards or southwards, following the windings of the sea-coast.

Their nests are generally built either upon trees or in fissures of rocks, sometimes upon ledges of cliffs or on the tops of mountains; less frequently on the little islands met with in marshes and swamps. Wherever their breeding-place may be, they are generally indebted to other birds for relieving them of a considerable share of the labour of nest-building, often contenting themselves with adding materials to their deserted domiciles. Some of them lay but a single egg, others two, others four; the eggs are small, of elongated shape, and generally covered with a calcareous deposit which obscures the markings on the shell. Both parents assist in the work of incubation, and some species would seem frequently to produce two broods in the course of the breeding season. Most of these birds feed exclusively upon fishes; some will occasionally devour small quadrupeds, molluscs, and worms, but fishes invariably constitute their ordinary diet. Some of them catch their food by sailing over the water at a little distance above the surface, whence they suddenly plunge into the water beneath; some swim upon the sea like Ducks, and seize their prey in shallow water by means of their long necks; whilst others again, after the manner of the real divers, pursue their prey to a considerable depth. They are terribly destructive to fishes, and are, consequently, everywhere regarded and treated as enemies by all fishermen.

The TROPIC BIRDS (*Phaëton*), "Children of the Sun," as they were called by Linnæus, always warn the mariner by their presence that he has entered the precincts of the torrid zone, beyond which they seldom stray. The characteristic features of these beautiful creatures are the small size and

compact build of their bodies. Their beak is about the same length as the head, and compressed laterally—its upper surface slightly curved, its apex acutely pointed, and its cutting edges finely denticulated. The legs are small in proportion to the size of the body, and the hind toe connected with the inner one by but a very narrow web. The wings are long, and the tail composed of twelve or fourteen quills; the central tail-feathers are remarkably prolonged, and present a structure that is quite peculiar, owing to the laxity and sparseness of their barbs. Their general plumage is thick and delicately tinted. "No one who sees the Tropic Birds for the first time," says Pöpping, "would regard them as inhabitants of the sea, but would rather imagine them to be land birds that had strayed by accident far into the illimitable desert of the ocean. In strength of wing they are unrivalled. Without moving their pinions in the slightest degree, or turning the body, they mount quickly to a great altitude, and there seem to repose upon the air, as if it were a solid support. Only when engaged in fishing, or when they perceive a ship, do they exchange this state of luxurious repose for active exertion. On such occasions down they come from the skies with astonishing speed, and never seem tired of circling round the vessel, as though narrowly watching all that may be passing on board. Frequently they soar so high as to be completely invisible except to a practised eye, but they are very rarely seen to swim."

THE WHITE-TAILED TROPIC BIRD.

The WHITE-TAILED TROPIC BIRD (*Phaëton æthereus*) is strikingly beautiful. Its head, neck, and under parts of the body are pure white, delicately tinged with red; the face is marked about the eyes with a broad stripe of black; the back and mantle are white, marked with a crooked dark line; the wings are black, bordered with white. The eye is brown, beak coral-red, foot dusky yellow. The length of this bird is two feet five inches, of this one foot five inches belongs to the centre tail-feathers; the breadth is three feet four inches. The White-tailed Tropic Birds are commonly met with upon the Atlantic Ocean, and, according to Latham, are found in abundance in the South Sea Islands, but are especially numerous in Palmerston Island, where the trees are frequently loaded with them. Ellis tells us that in the latter island they are so tame as to allow themselves to be taken from the branches with the hand. "These," says Bennett, "are amongst the most beautiful of all the oceanic birds, and excite admiration as the rays of a bright sun shine upon their chaste and delicate satin plumage; they are as gentle in manner as graceful in flight, and it is pleasing to watch their evolutions, for when soaring to a great elevation the action of their wings is slow, accompanied by a jerking motion, rising and falling in the air, at the same time uttering their peculiar, shrill notes. Sometimes they are resting on the surface of the water, and in calm weather occasionally seat themselves on the backs of turtles as they float along in lazy enjoyment."

Sailors formerly believed that the appearance of Tropic Birds indicated the contiguity of land; this idea, however, is erroneous, as they are frequently seen at a great distance from shore. According to Bennett this species has been seen 1,000 miles from the coast. The long tail-feathers of this beautiful bird are in great request.

THE RED-TAILED TROPIC BIRD.

The RED-TAILED TROPIC BIRD (*Phaëton phænicurus*) has, like the preceding species, white plumage tinged with rose-colour; a broad, black, transverse band, which commences in front of the eyes, is prolonged towards the back of the head into a point; the centre of the secondary quills, and the feathers on the sides are deep black; the shafts of the primary quills are black nearly to the tips. The middle tail-feathers are white towards their base, but elsewhere bright red with black shafts. The eye is blackish brown, beak scarlet, with a pale blue stripe at its base, and the tarsus faint blue; the

feet are black. The length of this species is two feet four inches, breadth three feet; the longest tail-feathers are fifteen inches, and the rest five inches. The Red-tailed Tropic Bird is met with throughout the warm and temperate parts of the South Seas and Indian Ocean; during August and September it retires to breed upon the islands. The following description of the eggs and young was given to Mr. Gould by Macgillivray:—

“The eggs of the *P. Phœnicurus* are blotched and speckled with brownish red on a pale reddish



THE WHITE-TAILED TROPIC BIRD (*Phaëton athereus*). ONE-FOURTH NATURAL SIZE.

grey ground, and are two inches and three-eighths long, by one inch four-eighths and a half broad. The contents of the stomach consisted of the remnants of cuttle-fishes.”

Latham states that these birds are found in great numbers in the Island of Mauritius, where they make their nests on the ground under trees. According to Bennett, “The nestlings have a singular appearance, resembling powder-puffs, being round as a ball and of a delicate snow-white colour; the plumage of the first year is white speckled with black, and they are deficient in the red shafts projecting from the tail, which do not make their appearance till the second year, when on the young bird moulting, the splendid and delicate roseate plumage is displayed.”

The GANNETS (*Sula*) are larger but more slenderly built than the Tropic Birds. Their bill is longer than the head, and the upper mandible looks as though it were divided posteriorly into an

upper and an under portion, so that the beak has the appearance of consisting of three parts. The tarsi are diminutive but strong; the wings unusually long, with the first quill the longest; the tail consists of twelve feathers, and terminates in a wedge-like point. The face and throat are naked.

The Gannets inhabit the northern hemisphere, and are met with in all seas from 70° north latitude to the tropics; further southward their absence is supplied by other species. They are abundant in Iceland, and the Faroe Islands, the Orkneys, and the Hebrides; upon the coast of Norway they are less frequent, but plentiful on the American shores, both of the Pacific and Atlantic. In Great Britain Gannets breed in great numbers on the Bass Rock, Souliskerry, St. Kilda, Ailsa, and Skellig Islands. They betake themselves to the open sea during the winter, pursuing the herrings, pilchards, and other fishes, upon which they dart nearly vertically. It would seem as if these birds entertained a sort of affection for certain islands, or particular localities upon the coast. When they have an opportunity of doing so, they like to pass the night on dry land, generally preferring high precipitous cliffs that rise abruptly from the sea, and from which they can see the waves breaking perpetually before them. Their choice in this particular is somewhat fanciful, at all events they are always to be seen on certain rocks, and seem as constantly to avoid others apparently just as well suited to their purpose.

The power of flight possessed by these birds is very great; they appear to swim only while they give themselves a little rest upon the water, and are never seen upon dry land except during the breeding season, or when, as has been said, they come on shore to sleep. When trying to stand upon their feet they are very helpless, and their walk is hardly more than a waddle. Neither is their power of swimming of much avail; they allow themselves to be blown along by the wind without any exertion of their own, and, indeed, never use their legs except when compelled to do so. When they employ their wings, however, they make up for these deficiencies; their flight is, perhaps, inferior to that of the Petrels, but it is exceedingly swift and strong. After a few rapid strokes of the wings, apparently to give it the necessary impulse, the Gannet glides through the air like an arrow, wheeling round and turning with the greatest ease, at one time sailing close to the surface of the sea, at another rising high into the air, and guiding its course by the simple sloping of its wings. Its voice consists of a succession of harsh croakings, while that of the young birds is a disagreeable screech. Whoever has visited the localities where these birds breed, will have little difficulty in understanding the beds of guano which of late years have been so profitably turned to account. They congregate upon the islands selected as their nesting-places by hundreds of thousands, and by millions, insomuch that, using the words in their literal sense, the air all around is filled with them; "their multitudes shut out the light of the sun, and their voices deafen any visitor." Towards the end of April they first make their appearance upon these islands, and leave them again about October. Their nests are placed so close together, that it is difficult for a man to walk between them. Those first built are of tolerably large dimensions, those made at a later period considerably smaller, while those constructed by the last comers must necessarily be placed on any little unoccupied spaces that can be sought out. The nest itself consists of a mere heap of land or sea plants, on which the female deposits her single egg. The eggs are of moderate size, with chalky-looking shells that are at first white, but soon become of a dirty yellowish brown. The young birds are not hatched till the beginning of June, and by the end of July are about half grown, but still clad in a yellowish white dress of short down.

"In the year 1821," says Faber, "I visited one of the little islands upon which these birds had built their nests. As soon as I had landed, both young and old greeted my arrival with a burst of most discordant music, consisting of one harsh shrieking sound. Not one of them, however, stirred from the spot where they sat, so that I might have readily helped myself to as many of them as I chose. The nests lay crowded close together, but the ground was so slippery with all sorts of filth, that in

walking amongst them I should have run the risk of falling from the craggy cliffs into the sea. It was a wonderful sight to see the multitudes below fishing for food, which, as soon as they had collected enough, they brought with flagging wings to the top of the rock and laid it before their young ones. Towards the end of August, the nestlings are fully fledged, and at that time if they are not larger they are at least fatter than their parents. In this condition the country people catch as many of them as they can, and salt them for food."

In St. Kilda every year there is a regular massacre of young Gannets, which, as they are killed, are thrown down from the rocks into the sea, and there collected into boats ; great quantities are then sent to Edinburgh and other places and brought to market.

THE COMMON GANNET.

The COMMON GANNET (*Sula alba*) is altogether white, except the primary quills, which are brownish black ; the upper part of the head and hinder part of the neck are tinged with yellow. The plumage of the young is blackish brown upon the upper parts of the body, speckled with white ; the under surface is light brown spotted with a darker shade. The eye is yellow, the beak blueish, the foot green, and the bare skin of the throat black. This species is from thirty to thirty-three inches long, and from seventy-two to seventy-four broad ; the wing measures twenty-one, and the tail ten inches. The female is somewhat smaller than her mate.

These birds are constant residents on the shores of Great Britain, changing their locality, however, according to the varying seasons of the year. The principal breeding-places are, Lundy Island, the Skellig Isles on the coast of Kerry ; and in Scotland, the Isle of Ailsa, St. Kilda, Souliskerry (Orkney), and the Bass Rock in the Firth of Forth. This latter rock, where Macgillivray made some observations which we will detail, is about a mile in circumference, and of an oblong form, with precipitous cliffs, in some places perpendicular, and in others overhanging, except in one narrow part, where a less abrupt projection forms the only landing-place.

"The Gannets arrive about the middle of February or the beginning of March, and depart in October ; some years, a few individuals remain during winter. The nests are composed of grass and seaweed, generally placed on the bare rock or earth elevated in the form of a truncated cone, of which the base is about twenty inches in diameter, with a shallow terminal cavity. On the summit of the island are numerous holes in the turf, formed by the Gannets in pulling away grass and turf for their nests ; these are placed in all parts of the rock where a convenient spot occurs, but are much more numerous towards the summit. Some of them, which have been occupied for years on the face of the cliff, or in a shallow fissure, are piled up to the height of from three to five feet ; but in this case they always lean against the rock. The egg, which is solitary and presents nothing remarkable in its position, is of an elongated oval form, white, dull, with a chalky surface, usually sullied or patched with yellowish brown dirt. It is subjected to rough usage, for the bird when alighting, flying off, or disturbed by the intrusion of human visitors, tosses it about, and often stands upon it. All the movements of the Gannets on land are very awkward ; it hobbles or waddles when it tries to walk, stares at you with its white goggle eyes, opens its ugly black throat, and emits a torrent of crackling sounds.

"When sitting, the Gannets allow a person to approach within three feet, sometimes much nearer, so that one may even touch them. When approached, they merely open their bill and utter their usual cry, or rise to their feet and express some degree of resentment, but little apprehension of danger. They take advantage of the absence of their neighbours to pilfer the materials of their nests ; frequently two join in the same act, and occasionally two may be seen at the same bunch, endeavouring to wrest it from each other. They are constantly repairing their nests, which, being

composed in a great measure of seaweeds, shrink up in dry weather and decompose in wet ; and when seated close together have frequent quarrels. I saw one seize its neighbour by the back of the neck, and hold fast until the assaulted bird, I may say, roared out ; but in general they are satisfied with menacing each other with their open bills and loud clamour." Owing to their so often interfering with each other, a constant noise is kept up amongst them. Their cry is hoarse and harsh, and may be expressed by the syllables, "Carra, carra," or "Kirra, kirra;" sometimes it is "Crac, crac," or "Cra, cra," or "Cree, cree." The cry varies considerably in different individuals, some having a sharper voice than others, and when unusually irritated they repeat it with great rapidity.

When first hatched they have a smooth, bare, black skin ; this soon becomes covered with white down, which thickens until the nestlings present the appearance of a powder-puff ; through this down the true feathers, which are black, appear, and are followed by the adult white plumage.

"The old bird," says Macgillivray, "at first feeds its young with a kind of fish-soup, prepared in its own gullet and stomach, and which it introduces, drop by drop as it were, into its throat ; but when its nursling is pretty well grown, it places its bill within its mouth and disgorges the fish, either whole or in fragments. It never carries fish to the rock in its bill. Upon the Cornish coast these birds are most abundant in autumn and winter."

"The fishermen," says Mr. Couch, "learn by their actions when shoals of pilchards are present, and what course they are pursuing. The Gannet takes its prey in a different manner from any other of our aquatic birds ; for, traversing the air in all directions, as soon as it discovers the fish, it rises to such a height as experience shows best calculated to carry it by a downward motion to the required depth, and then, partially closing its wings, it falls perpendicularly on the prey, and rarely without success, the time between the plunge and immersion being about fifteen seconds."

THE FRIGATE BIRD.

The FRIGATE BIRD (*Tachypetes aquila*) has deservedly been called the "Eagle of the Sea." The most conspicuous feature whereby it may be distinguished among all allied species, is the enormous development of its wings. Its body is slim, the neck powerful, and the head of moderate size ; the beak is half as long again as the head, somewhat depressed at its base, vaulted above, and strongly hooked at the tip ; the apex of the under mandible is bent downwards in a corresponding manner ; the space beneath the lower mandible is large, broad, and denuded of feathers ; the gape extends backwards to beneath the eyes ; the tarsus is very short, powerful, and covered with feathers as far as the feet ; the web between the toes is extremely narrow, looking as if a portion of it had been cut away ; the toes are furnished with strong, sharp, curved claws, that on the inner side being toothed ; the wing is of inordinate length, and sharply pointed at the tip, the first quill being the longest ; the tail consists of twelve feathers, and is very long and deeply forked ; the general plumage is compact, smooth, and glossy ; upon the head, neck, and breast the feathers are elongated, upon the mantle round, and upon the breast fur-like ; the throat and a space around the eyes are naked. The colour of the plumage of the adult male is brownish black, shimmering with metallic green and purple on the head, nape, back, and sides ; upon the wings it is shaded with grey ; and upon the secondary quills and tail with brown ; the eye is deep or greyish brown, the naked space around the eye purple-blue, the beak light blue at the root, white in the middle, and dark horn-colour at the point ; the sac beneath the throat is orange-yellow. The length of the Frigate Bird is forty-one inches, the spread of the wings twenty-five inches, length of tail eighteen inches. The weight of the entire bird is only a little more than three pounds. The female is distinguishable by her lighter tint and duller colours, and by her breast being more or less covered with white feathers.

The Frigate Bird is to be found in the same latitude as the "Sons of the Sun," braving with

them the fervour of inter-tropical heat, but it seldom wanders so far from land as they. It has indeed been reported to have been seen at a distance of from six hundred to seven hundred miles from the nearest coast, but generally speaking, it seldom flies to more than from twenty to fifty miles from the shore, to which it usually resorts in stormy weather. At the earliest dawn of morning it leaves its sleeping-place, and may soon afterwards be observed making broad circles in the air, or flying rapidly against the wind towards the sea in search of food. After catching fishes until satisfied, it returns to the dry land, which it reaches, should the weather be stormy, about noon, but if fine, not until later in the day. Mr. Gosse, wishing to know at what time this species retired to their resting-places,



THE FRIGATE BIRD (*Tachypetes aquila*). ONE-FIFTH NATURAL SIZE.

visited one of these, arriving there just at sunset, but found to his mortification that he was too late ; already the Frigate Birds, Gannets, and Pelicans that resorted to the spot, had retired to roost. At his approach, however, the whole assembly rose as it were in a mass from the trees where they had been reposing, the Frigate Birds instantly flying far out to sea, or sailing in beautiful circles high in the air, neither did they return until darkness had completely set in. A few days later, the same observer visited the place at an earlier hour, arriving about three or four o'clock in the afternoon, but even then he found that the greater number of them had got home, and were quietly digesting the result of their day's employment.

This bird, according to Bennett, being incapable of swimming and diving, may generally be seen on the alert for flying-fish, when these are started into the air by Albicores and Bonitas, and when

unsuccessful it is compelled to resort to a system of plundering other sea-birds. The quiet and industrious tribes, the Gannets and Sea Swallows (*Sterna hirundo*, Linn.), are generally selected as objects of attack, and on returning to their haunts to feed their young brood, after having been out fishing all day, are stopped in mid-air by the marauding Frigate Bird, and compelled to deliver up some of their prey, which, being disgorged by them, is most dexterously caught by the plunderer before it reaches the water. A Frigate Bird has been observed to soar over the mast-head of a ship, and tear away the pieces of coloured cloth appended to the vane.

"About the middle of May," says Audubon, "a period which to me appeared very late for birds found in so warm a climate as the Florida Keys, the Frigate Pelicans assemble in flocks of from fifty to five hundred pairs or more. They are seen flying at a great height over the islands on which they have bred many previous seasons, courting for hours together, after which they return towards the mangroves, alight on them, and at once begin to repair the old nests or construct new ones. They pillage each other's nests of their materials, and make excursions for more to the nearest Keys. They break the dry twigs of a tree with ease, passing swiftly on wing and snapping them off by a single grasp of their powerful bill. It is indeed a beautiful sight to see them when thus occupied, especially when several are so engaged, passing and repassing with the swiftness of thought over the trees whose tops are blasted; their purpose appears accomplished as if by magic. It sometimes happens that this bird accidentally drops a stick while travelling towards its nest, when, if this should happen over the water, it plunges after it, and seizes it with its bill before it has reached the waves. The nests are usually placed on the south side of the Keys, and on such trees as hang over the water, some low, others high; several in a single tree, or only one, according to the size of the mangrove, but in some cases lining the whole island. They are composed of sticks crossing each other, to the height of about two inches, and are flattish, but not very large. When the birds are incubating, their long wings and tails are seen extending beyond the nest for more than a foot. The eggs are two or three—more frequently the latter—in number, measure two inches and seven-eighths in length, two in breadth, being thus of a rather elongated form, and have a thick smooth shell of a greenish white colour, frequently soiled with the filth of the nests. The young are covered with yellowish white down, and look at first as if they had no feet. They are fed by regurgitation, but grow tardily, and do not leave the nest until they are able to follow their parents on the wing."

"The Frigate Pelican," continues the same authority, "is possessed of a power of flight which I imagine superior perhaps to that of any other bird. However swiftly the Cayenne Tern, the smaller Gulls, or the Jager move on wing, it seems a matter of mere sport to it to overtake any of them. The Goshawk, the Peregrine, and the Gyr Falcon, which I conceive to be the swiftest of our Hawks, are obliged to pursue their victim, should it be a Green-winged Teal, or Passenger Pigeon, at times for half a mile at the highest pitch of their speed before they can secure it. The bird of which I speak comes from on high with the velocity of a meteor, and on nearing the object of its pursuit, which its keen eye has spied out while fishing at a distance, darts on either side to cut off all retreat, and with open bill forces it to drop or disgorge the fish which it has just caught. Upon one occasion I observed a Frigate Bird that had forced a Cayenne Tern, yet in sight, to drop a fish, which the broad-winged warrior had seized as it fell; this fish was rather large for the Tern, and might probably be about eight inches in length; the Frigate Bird mounted with it across his bill about a hundred yards, and then, tossing it up, caught it as it fell, but not in the proper manner; he therefore dropped it, but before it had fallen many yards caught it again. Still it was not in a good position, the weight of the head, it seemed, having prevented the bird from seizing it by that part. A second time the fish was thrown upward, and now at last was received in a convenient manner, that is, with its head downwards, and swallowed. These birds are gregarious, and utter a rough croaking cry."

The Society Islanders ornament the head-dresses of the chiefs with the feathers of these birds, climbing the cliffs, where they are congregated during the breeding season, in order to procure them. The eggs are laid on the sand, beneath a sheltering ledge in the lofty cliffs of Ascension Island and other coasts, and in the low islands of the South Pacific. According to Dr. Bennett, they roost and build in lofty trees. Mr. Burton states that the female deposits one egg, and the male bird sits, a fact clearly established, as one was absolutely taken by the hand while sitting.

The CORMORANTS (*Haliet*) are peculiarly-constructed birds, easily recognisable by the following characters :—Their body is very much elongated, almost cylindrical in shape, and powerfully built. Their neck is very long, slender, or thin ; their head small. The beak is of moderate length, and either straight and sharp-pointed, or strongly bent down and hooked at the end. The tarsus is short and compressed at the sides ; the toes large. The wings are long, but blunt at their extremity, owing to the shortness of the primaries, of which the third is the longest. The tail, which consists of twelve or fourteen feathers, is of medium size, or moderately long, and scarcely at all arched ; so that it looks very oddly put on. The quills of the wings and tail are very hard, with the barbs broad and strongly connected, the shafts being strong but flexible ; the feathers of the under side are loose and silky, those of the upper side closely imbricated.

The members of this numerous family are to be met with in all parts of the world, living equally well in the sea or in fresh water. Some species are resident in the northern seas, but the greater number frequent the temperate and torrid zones. Their habitat is very diversified ; some species seldom remove far from the sea, where they take their station on some rocky island, others dwell in reedy marshes or in lakes formed by rivers, only casually visiting the sea-coast ; or follow the course of rivers very far into the interior, where they remain during the breeding season. The northern species are regular birds of passage, but those in southern climates only wander from place to place.

The Cormorants are peculiarly adapted to an aquatic life ; they are the most gifted divers belonging to their order, and are almost equally qualified for any other kind of locomotion. They walk tolerably on level ground, and although their gait is somewhat vacillating, they are strikingly at home amongst the branches of trees. Their flight is much better than their appearance would seem to indicate, although when flying they always look as if they were fatigued. As far as is possible, they spend their time in the water, where they swim and dive with such skill and perseverance as astonishes anyone who watches their exertions.

The name of these birds is indicative of their voracity, which it seems impossible to satisfy ; they will eat as much and as long as they can, and immediately attack any other food that may happen to come within their reach. They seem to rest simply for the purpose of again enabling them to eat, and, with the exception of the very short period they employ in pluming their feathers, their whole time is usually employed in eating and sleeping. The expansiveness of their gullet enables them to swallow fishes of considerable size, but these are rapidly digested, and their craving appetite must again be satisfied. In lands occupied by man, their presence is not tolerated, seeing that they do unspeakable damage to fisheries, but in the ocean, where they can gorge *ad libitum*, without interfering with mankind, they are at least of some service ; they devour fishes and convert them into guano. All the birds belonging to this family build their nests in company with others of their race, and sometimes the numbers thus congregated together amount to several thousand pairs. Their nests are placed either on rocky islands, where they build in the clefts and fissures, or upon the ledges of the rocks, or else in inland places upon trees, forty or fifty of them together. When obliged to build their own nests, they construct a rude framework of thick twigs, upon which they

pile sedges and other kinds of grass, which are heaped together in a very slovenly manner, and moreover kept so wet that the contents literally lie in a sort of puddle. Their eggs, generally from two to four in number, are proportionately very small, and much elongated, they have a strong white shell generally covered with soft chalky matter. Both sexes brood alternately, with much self-devotion, and both assist in the nurture of their young ones, which when first hatched are nearly naked, but at a later period become clothed with a thick coat of dusky-coloured down. They cannot be said to be fledged till they are nearly half grown, at which period they begin to follow their parents into the water, by whom they are instructed for a few days, and then left to their own devices.

The DARTERS, or SNAKE-NECKS (*Plotus*), we consider as indubitably belonging to the family of the Cormorants, from which they are principally distinguishable by the conformation of their neck and bill; in other particulars of structure, more especially in their internal anatomy, they resemble them so closely that to separate the two races, as many English ornithologists have done, is out of the question. Cormorants they are in their shape and the coloration of their plumage, and they are Cormorants likewise in their habits and mode of life.

The Darters are characterised by the extraordinary elongation of their bodies; the thinness of their snake-like necks; their small head and straight, slender, acutely-pointed beak, the cutting edges of which towards the apex are finely toothed. The legs are short, thick, strong, and placed very far backwards; the feet are provided with long toes. The wings are long, but rounded at their apices, their third quill being the longest. The tail is long, and consists of twelve quill-feathers, each of which becomes considerably increased in breadth towards its extremity. The general plumage is handsome, and brightly coloured, the feathers upon the upper surface being much elongated, while those on the under side of the body are so lax as to resemble fur. In their internal structure, as we learn from Audubon's dissections, these birds present all the anatomical peculiarities of the Cormorants, the most considerable differences being the smallness and slenderness of the skull and the structure of the cervical vertebræ, which, from their great elongation, remind us of those of the Herons. At the present time we are acquainted with four distinct species of Snake-necks, which belong respectively to America, Africa, Southern Asia, and New Holland; these differ considerably amongst themselves, not only in shape and colour, but also in their mode of life.

THE ANHINGA.

The ANHINGA (*Plotus Anhinga*) has the head, neck, and all the under side of the body velvet-black, shaded with green, the top of the head and forehead being slightly speckled with greyish brown. The upper back and upper surface of the wing are marked with patches of a lighter colour. The shoulder and hinder wing-covers are longitudinally streaked with white, the quills and tail-feathers are black, the latter shading into greyish brown towards their apices. The eye is bright orange-red, or in some cases dirty orange-yellow; the inner side of the leg is dingy yellowish brown, its external surface dirty greyish brown. The length of this species is thirty-five inches, breadth forty-five inches; length of wing thirteen inches, length of tail, ten inches. In the female the head, hinder neck, and back are of a grey-brown, the under surface is tawny, and the belly brownish black.

Both the present species, and those inhabiting South Asia and Australia live, if not exclusively, at least preferably, in fresh water. Tschudi, indeed, asserts that the Anhinga has at times been met with on the open sea fishing in company with twenty or thirty others, but we are very doubtful as to the correctness of this statement.

In remote districts, seldom visited by man, these birds evince so little shyness, that it is not

difficult to procure specimens; all that is requisite is to find out the trees upon which they sleep and towards evening to take up a position in the vicinity and patiently await their coming. When one of them is shot, all the survivors tumble, as if dead, into the water below, where they immediately dive, and when they come up again, only show their necks above the surface; moreover they generally ensconce themselves among the floating weeds, where they are hidden from observation. The Prince



LE VAILLANT'S SNAKE BIRD, OR DARTER (*Plotus Levaillantii*).

von Wied, when travelling in Brazil, tried to shoot Anhingas from a boat, laying himself down at the bottom, and allowing it to float with the stream until he came close to some of them, at which he instantly fired; he found, however, that it was easier to waste his shot than to kill the birds, as their bodies were completely hidden in the water, and to hit their slender necks before they could be withdrawn was a very different matter. Dr. Bachmann gives the following interesting account of two Snake Birds which he brought home and kept with a view to taming them:—

“While these two birds,” he says, “were yet in the same cage, it was curious indeed to see the

smaller one, when hungry, incessantly trying to force its bill into the mouth and throat of the other, which, after being thus teased for a short time, would open its mouth, to suffer the little one to thrust its whole head down the throat of its brother, from which it would receive the fish which the latter had swallowed. In this singular manner did the larger bird—which after awhile proved to be a male—continue to act as the foster-parent of his weaker sister, which indeed seemed to be thrown on his protection. The one still in my possession is fed on fish, which it picks up, tosses a few times in the air, and swallows at the first convenient opportunity—that is, when the fish falls towards its mouth head-foremost. At the outset, when the fish was large, I had it cut into pieces, thinking that the apparent slenderness of the bird's neck could not expand enough to swallow it whole; but I soon ascertained that this was not necessary. Fish three times the size of the neck were tossed up, seized by the expanded jaws and gobbled at once, and immediately after, the bird would come to my feet, clicking its bill in such an unequivocal manner that I never failed to give it more. My pet was tame from the beginning of its captivity, and followed me about the house and garden until it became quite troublesome from its attachment to me. It was not until the bird was fully fledged that I found it willing or anxious to go into the water; and then whenever it saw me go towards the pond, it accompanied me as far as the gate of the garden, seeming to say, 'Pray let me go.' On my opening the gate, it at once followed me, waddling like a Duck; and no sooner was it in sight of its favourite element than it immediately let itself in, not with a plunge, but by dropping from a plank into the stream, where for awhile it would swim like a Duck, then dipping its long neck, it would dive for the purpose of procuring fish. The water was clear enough to enable me to see all its movements; and after many devious windings, it would emerge at the distance of forty or fifty yards. This bird sleeps in the open air during warm nights, perched on the highest bar of the fence, with its head under its wings, and in rainy weather it often sits in the same position for nearly the whole day. It appears to be very susceptible of cold, retreating to the kitchen and near the fire, battling with the cook or the dogs for the most comfortable place on the hearth. Whenever the sun shines, it spreads its wings and tail, rustles its feathers, and seems delighted with our warmest sunny days. When walking, and occasionally hopping, it does not support itself by the tail as Cormorants sometimes do. When fishes are presented to it, it seizes and swallows them greedily; but when these cannot be procured, we are forced to feed it on meat, when it opens its mouth and receives the food placed in it. Occasionally it has spent several days without any food; but in those cases the bird became very troublesome, harassing all around by its incessant croakings, and giving blows to the servants, as if to remind them of their neglect."

LE VAILLANT'S SNAKE BIRD.

LE VAILLANT'S SNAKE BIRD (*Plotus Levaillantii*), like the preceding species, is black upon the under side of the body, the neck is rust-red, a stripe beginning at the eye, and extending down the sides of the neck is blackish brown, and another below this white. The plumage on the back is nut-brown, the long feathers are silvery white; the wings and tail are black, the latter becoming somewhat lighter towards its extremity. The eye is copper-colour, and the bare skin on the head yellowish green; the beak is grey, and foot greenish blue. The length of this bird is thirty-three inches, and its breadth forty-one inches and a half; the wing measures thirteen inches and tail nine inches and a half. The female resembles her mate, but is not so brightly coloured. Le Vaillant's Snake Bird inhabits Africa, where it is to be met with on suitable sheets of water from 15° north latitude to the Cape of Good Hope.

The CORMORANTS PROPER (*Phalacrocorax*) differ from the Snake Birds principally in their more bulky shape and in the construction of their bill. Their beak, which is of moderate length,

is compressed at the sides, rounded above, furrowed at the sides of the upper mandible, bent downwards and strongly hooked at its tip. The legs are strong, and wings short, with the third quill longer than the rest. The tail consists of twelve feathers, and is shorter than that of the Darters. The Cormorants are met with from the middle of Norway to the south of Europe, and during the winter resort in countless multitudes to Africa. They are also very abundant in Central Asia and North America, whence they wander as far as the West Indies. The habitat of these birds is either the sea or fresh water, according to circumstances. They frequently resort to large rivers or lakes thickly skirted with trees, and sometimes make their appearance in inhabited districts, from which it is difficult to drive them away. An instance is even recorded in which they took up their quarters in the centre of a town, selecting the church tower for their citadel. They visit the sea in great numbers, and there seem to prefer certain localities, generally selecting a situation where the coast is but little accessible or where there are long reefs and ridges of rock. They are very abundant on the coast of Scandinavia, as also in Iceland, the Faroe Islands, the Hebrides, Orkneys, and other similar localities where they are little disturbed by mankind. During the winter season they are met with in equal abundance in more southern districts. In Greece they may be seen in great numbers from one year's end to another, both upon the large lakes and in the sea. In Egypt, they cover the lakes near the shore, as far as the eye can reach, whence they every morning fly out to sea in countless multitudes, returning in the evening. In Southern China and in India they are equally numerous. Indeed, it may be said that they are met with in every locality where water and fishes are to be had. In their habits and mode of life the Cormorants present many peculiarities. They are very sociable, and generally keep together in flights that are more or less numerous. It is a rare occurrence to see one of them alone. During the morning they are always indefatigably employed in fishing; about noon they betake themselves to repose, and digest their food; towards evening they are again busy fishing, and afterwards they resort to the places where they sleep. These are generally lofty trees, growing at some little distance inland upon islands in rivers or lakes, the same upon which they subsequently build their nests; they are generally such as afford them an extensive prospect in every direction, and allow them to fly away and return with facility. The islands thus frequented are easily recognisable at a distance by the thick covering of nascent guano by which the ground is everywhere hidden; indeed, they would soon literally become beds of that material had it a Peruvian sun to dry, or as Scheffel says, "purify" it. Similar deposits are likewise to be seen on islands in the sea, which seldom fail to arrest the attention of the passing mariner. Their history, however, is quite intelligible, and their appearance remarkable when they are densely covered with Cormorants, sitting in close ranks like regiments of soldiers, tier above tier, all turned in the same direction with their faces towards the sea; thus presenting a strangely picturesque scene, for although they are stationary, they are by no means motionless; each of them is constantly moving its head, spreading its tail, or stretching out its wings, so as to give an appearance of animation to the whole assemblage. For a single individual among them to remove from the place where it stands without flying away altogether is an impossibility, so densely are they crowded together. It is asserted by some that these birds can only walk while propping themselves up with their tails; this, however, is not correct; their walk, it is true, is but a clumsy waddle, still it enables them to get over the ground with tolerable quickness. Upon the branches of trees the Cormorants are much more at home than on level ground; nevertheless, like the Snake-necks it is only when swimming or diving in the water that they show their real capabilities. Should a boat approach the rock upon which hundreds of them have taken their station, they first begin to show symptoms of uneasiness by stretching out their necks and moving their heads; they then begin a sort of restless shuffling backwards and forwards, and ultimately they take flight; a few of the assembled multitude rise into

the air, flying at first with fluttering wings, but they soon sweep away, gliding straight forward to a considerable distance, or rise upwards in circles high into the air; the majority of them, however, spring at once into the sea, like so many frogs. Here they instantly dive, and when they come up again may be seen a considerable distance off, peering at the boat with their little green eyes and ready to dive again, in an instant, should they think such a course conducive to their safety. The Darters unquestionably swim and dive more dexterously, but it is questionable whether any other birds can excel the Cormorants in this respect. They progress so rapidly under the water, that a boat manned with strong rowers is unable to overtake them; they dive likewise not only to a great distance, but to a considerable depth, and when they come up, they simply take breath and at once dive again. When chasing their prey beneath the surface they stretch their bodies quite straight, and by powerful strokes of their feet, dart through the water with arrow-like swiftness.

That these birds possess a good deal of intelligence is proved by the fact that in China great numbers of tame Cormorants are taught to catch fish for the benefit of their owners. Fortune was informed by one of these Chinese fishermen that the birds so employed are kept in a state of captivity from the moment of their birth, and that the eggs from which they are obtained are incubated by barn-door fowls. When old enough they are taken to the water-side, and there carefully taught to obey their master's commands, and to bring to him the fishes that they procure. Upon inland waters the presence of Cormorants is a very serious matter, seeing that they destroy the fish in incredible quantities. Their voracity is almost beyond belief; a single Cormorant, when it can get them, will eat as many fishes as a Pelican. Although Cormorants generally prefer to build their nests upon trees, when these are not to be found they content themselves with cavities and projections among rocks or places of a similar description. In inland situations, or where the woods come down almost to the sea, they often make their appearance in rookeries and heronries, and after expelling the Rooks with little trouble, and the Herons after long-contested battles, proceed to take possession of their nests, to which they add a few materials of their own selection, and at once begin to lay their eggs. Should they remain in undisturbed possession of the invaded locality for a year or two, they are only to be got rid of with the greatest difficulty. In the year 1812, says Naumann, four pairs of Cormorants made their appearance in Lutzenburg, not far from the sea-coast, and built their nests in a wood upon a very high beech-tree, which had been for several years the resort of Rooks and Herons. After driving away the Herons, whose nests they took possession of, they each proceeded to rear two broods, one in May, the other in July, and when they left the place about the end of autumn, they numbered about thirty individuals. In the spring of the following year, these repeated their visit, and continued to return every year in still increasing numbers, until it was estimated that there were at least 7,000 brooding pairs assembled in the neighbourhood. Boje counted fifty of their nests in a single tree, the multitudes of them constantly flying to the sea and returning again seemed to fill the air, and the noise they made was positively deafening; the trees upon which they assembled were white with filth, and the whole place stank in consequence of the quantities of putrid fishes fallen from their nests. It was only after several years of unabated exertion that they were at length destroyed or driven away.

The Cormorants generally make their appearance in their breeding-places in April, and set about preparing their nests with great zeal. Towards the end of the month, they lay three or four narrow eggs, of a blueish green colour, but generally incrustated with calcareous deposit. The two sexes sit by turns for about four weeks, and when the young are hatched feed them with indefatigable perseverance. Being thus abundantly provided for, the nestlings grow rapidly; the old birds behave very affectionately towards their progeny, but when danger threatens will not stay to defend them, at least from their human enemies. Whenever the old birds visit their nests, they are literally full to

the throat with the food that they have procured ; each of them disgorges on the borders of the nest several dozens of small fishes, which are immediately appropriated by the hungry occupants. Many, however, fall upon the ground, and as no Cormorant thinks it worth while to pick them up, they are left to taint the atmosphere. Towards the end of June the young birds fly away, and the old ones begin to rear a second brood. The chase after Cormorants is a very favourite amusement with the zealous sportsman, although the birds when killed are of no use whatever. Their watchfulness and cunning when they are at large are calculated to test his utmost perseverance and caution.



THE CORMORANT (*Phalacrocorax carbo*). ONE-FIFTH NATURAL SIZE.

Near the trees where they build their nests, however, they are very much more easily destroyed, and still more readily in their eyries ; their destruction, indeed, is so simple that it becomes almost a matter of necessity. But here the sport loses its charms, and the battues that are organised against them assume very much the appearance of a massacre ; every one who can procure a gun hastens to the scene of action, and multitudes of the birds are annually slaughtered. In this country the flesh of the Cormorant is regarded as uneatable ; the Laplanders, however, and also the Arabs, are of a very different opinion, and consider it, on account of its fatness, to be an especially dainty kind of food.

THE COMMON CORMORANT.

The COMMON CORMORANT (*Phalacrocorax carbo*) is from thirty-five to thirty-seven inches long, and from sixty to sixty-four broad. The length of wing is fourteen to fifteen inches, and of tail six and a half to seven inches. The plumage on the top of head, neck, breast, belly, and rump is of a glossy blackish green, with a slight metallic lustre. The fore part of the back and upper surface of the wings brown with a bronze shade. Owing to the dark margins of the feathers, these parts have the appearance of being imbricated: quills and tail-feathers black; a white patch commencing behind the eye surrounds the throat. The eye is sea-green; beak black, with yellowish base; the bare skin on neck and face is yellow; and foot black. During the breeding season the Cormorants, more especially the males, have delicate white feathers on the head; these, however, soon disappear. The young are more or less grey; the upper parts of the body being dark, with the imbricated appearance above alluded to; the under side is yellowish or light grey. This species is commonly found on all the rocky parts of the British coast. The nests are placed on high cliffs, many birds congregating together and living harmoniously. The nest is large, and composed of sticks and a mass of coarse grass and seaweed, sometimes a foot high. The rough oblong eggs are from four to six in number, of a chalky white and pale blue colour. In the course of a few days after hatching, the young are able to take to the water. "These birds," says Yarrell, "are frequently seen sitting on posts, rails, or leafless trees by the water-side, when, if a fish should move on the surface within their sight, it is pounced upon and caught to a certainty. An eel is a favourite morsel with him, and a Cormorant has been seen to pick up an eel from the mud, return to the rail he was previously sitting upon, strike the eel three or four hard blows against the rail, toss it up into the air, and, catching it by the head in its fall, swallow it in an instant."

"In China the bridges across the Min, at Fuhchau, may often be seen crowded with men viewing the feats of the tame fishing Cormorants. These birds look at a distance about the size of a Goose, and are of a dark dirty colour. The fisherman who has charge of them stands upon a raft, about two feet and a half wide and fifteen or twenty feet long, made out of five large bamboos of similar size and shape, firmly fastened together. It is very light, and is propelled by a paddle. A basket is placed on it to contain the fish when caught. Each raft has three or four Cormorants connected with it. When not fishing they crouch down stupidly on the raft.

"The fisherman, when he wishes to make a Cormorant fish, pushes or throws it off the raft into the water. If it is not disposed at once to dive and seek for fish, he beats the water with his paddle, or sometimes strikes the bird, so that it is glad to dive and get out of his reach. When it has caught a fish it rises to the surface, holding it in its mouth, and apparently striving to swallow it. A string tied loosely around its neck or a metallic ring effectually prevents swallowing, except perhaps in the case of very small fish. It usually swims directly for the raft. The fisherman on seeing the prize paddles towards it with all speed, lest it should escape from the bird. Sometimes the fish is a large one, and there is evidently a struggle between it and the Cormorant. The fisherman, when near enough, dexterously passes a net-like bag, fastened to the end of a pole, over the two, and draws them both on the raft. He then forces the fish from the grasp of the bird, and, as if to reward the latter for its cleverness and success, gives it a mouthful of food, which it is enabled to swallow on his raising the ring from the lower part of its neck. The bird, if apparently tired out, is allowed to rest awhile on the raft, and then it is pushed off again into the water and made to dive and hunt for fish as before. Sometimes the Cormorant, from imperfect training, swims away from the raft with the fish it has caught. In such a case the fisherman pursues and speedily overtakes the truant. Sometimes, it is reported, two or three Cormorants assist in securing a large and powerful fish, and occasionally two

quarrel together for the fish one has taken, or one pursues the other for the fish in its mouth. At such times the interest of the spectators on the bridge increases to noisy shouting. The bird is provided with a sort of pouch or large throat, in which the small fish are entirely concealed, while the head or tail of the larger fish protrudes from its mouth. It is only at or near full tide that these birds are successful in catching fish under and near the bridges, as then the water is deep and comparatively still, and the fish seem to abound in the vicinity more than at low-tide. At such times there are frequently several rafts with Cormorants fishing near the bridges. The skill of the fisherman in propelling his craft, and the success of the bird in catching the fish are attested by the delighted curiosity and animated interest of the spectators."

The PELICANS (*Pelecani*), the largest and most striking members of this order, are at once recognisable by their enormous beak, furnished underneath with a capacious bag, and strongly hooked at its extremity. The upper mandible, which is remarkably depressed from its origin to its apex, is moderately broad, and rounded at the point; the culmen forms a conspicuous keel, running along the entire length of the upper jaw, and at its termination bends down to form the strong claw-like hook at the extremity. The lower mandible is exceedingly weak and slender, consisting of two long lateral branches, only joined to each other towards the apex, and enclosing between them a very capacious bag, formed by a dilatable expansion of the throat. In comparison with the above most characteristic features, the rest of the structure of the bird is to the ornithologist of secondary importance; it is, however, very peculiar. The body is large and cylindrical, the neck long and slender; the feet are small, toes long, and connected by a broad web. In the large broad wing, the third quill exceeds the rest in length; the tail, which is short, broad, and rounded, consists of twenty or twenty-four feathers. The plumage is thick, but remarkably hard and stiff; besides the almost naked sac beneath the throat, there is a considerable space around the eye completely denuded of feathers. The two sexes resemble each other very closely, but considerable differences serve to distinguish the old birds from the young.

Pelicans inhabit the torrid regions of the earth, but are also found to a considerable distance within the limits of the temperate zone. In their habits and mode of life, the different groups nearly resemble each other, and we shall therefore confine ourselves to a description of two species met with in Europe.

None but those who have travelled in Egypt and North Africa can form any idea of the vast numbers of fish-eating birds that there crowd the shores of every lake and river. Upon all the Egyptian lakes along the course of the Nile, during the period of its inundation, and still further to the south, along the banks of the Blue and White Nile, as well as on the shores of the Red Sea, Pelicans occur in such immense flocks that the eye is unable even to estimate their extent. Over a considerable surface of country they literally cover the quarter, or the half, of every square mile. When they are swimming out upon the lakes, they look like immense beds of water-lilies. When they come out of the water to sit upon the shore, more especially if it be upon one of the islands, and sit in the sunshine preening their feathers, they look at a distance like a vast white wall, and when they retire to sleep, all the trees upon the island are so thickly covered with them that they have the appearance of blossoms without a single green leaf. To meet a small flock of about ten or a dozen is an unusual occurrence, but to see hundreds or thousands together is a very ordinary spectacle. As the spring approaches, these enormous hosts are in some measure broken up. Many which during the winter season congregated together make their way to Southern Europe, where they breed, but numbers of them are left behind. In selecting the place of their sojourn, these birds seem to make no difference between salt water and fresh; they frequent both in almost equal numbers, but the depth of the water is to them a matter of considerable importance.

Only a single American species obtains its food by diving, the others are altogether too lightly built to render such a mode of fishing practicable. They lie upon the surface of the water as if they were made of cork, and it is only in shallow water, to the bottom of which they can reach with their long neck and hooked bill, that they usually fish for food. For this purpose they assemble together in some place where water is of the proper depth, arranging themselves with considerable regularity, so as to enclose a large space, which as they advance forward is gradually diminished. In large lakes and shallows by the sea-shore they arrange themselves in a semicircle, and row themselves gradually towards the beach, or else they form a complete circle, the diameter of which diminishes as they advance towards each other. In narrow rivers or canals they divide into two parties, and arrange themselves in close ranks facing each other, thus enclosing a space in which their prey is to be procured, as the two lines swim in opposite directions until they meet. In general these birds feed only on fishes, but not unfrequently they catch other vertebrate animals. Young birds, for example, that happen to approach them too closely are seized and swallowed, and even half-grown Ducks occasionally disappear down their capacious throats in an equally unceremonious manner. When on dry land the gait of these birds is slow and waddling, nevertheless they can scarcely be said to walk badly, and notwithstanding their webbed feet, they readily perch upon trees; they swim well, and their powers of flight are excellent. The daily life of the Pelicans is conducted in a very regular manner; the early hours of morning are employed in catching food, and they may then be seen hastening from all quarters to their fishing-ground, in small or large parties, the former flying in single file, the latter in the well-known V-shape adopted by many birds of passage. Some parties may soon be seen returning from the water, satisfied with their meal, while others are making their way towards the shallow bay from which their breakfast has to be procured. Towards ten o'clock a.m. they begin to congregate upon their favourite sandbank, or an inland group of trees, and here they repose after their toil, some lazily digesting their food, and others more actively employed in oiling and preening their feathers, a proceeding in which they are occupied for a considerable length of time, their long unmanageable bill being but little adapted to the work. When this is accomplished, they take a kind of siesta, some perched on trees, others on the ground, the former generally sitting bolt upright upon the branches, with their necks thrown back, and their beak resting on their breasts, while the latter generally lie flat on their bellies, and doze away the noontide hours. Between three and four o'clock the whole assembly begins to wake up and prepare for another fishing excursion, in which they are engaged till sunset, after which they at once set off to their sleeping-places, situated on a lonely sandbank, or some island covered with trees, upon the branches of which they pass the night. As to the breeding of these birds, we have been able to collect little from personal observation; it appears, however, by no means unlikely that in the interior of Africa some of them may build their nests in the trees, to which they so frequently resort. In Southern Europe, as Von der Muhle informs us, they select morasses and lakes for their breeding-places. In some of these lakes, says our informant, floating islands are to be met with, which are only approachable with great difficulty, and upon these they build their rudely-constructed nests, as close to each other as they can well be placed. The nests themselves are constructed of reeds and sedges, trodden together into a mass, and are generally damp or even wet. The whole neighbourhood is covered with their filth, the stench of which, added to that of the putrid fishes, which are everywhere strewn about, is at this hot season of the year, absolutely unbearable. Strangely enough they do not all breed at the same time, for brooding females are often sitting in the immediate vicinity of fledged young birds; indeed, Freyberg, who has often visited these breeding-places, informs us that in the same nest he has seen a nearly-fledged young one, and another as yet only covered with down, a circumstance only to be explained by supposing that two females had laid their eggs in the same nest. The usual number of eggs, as we are told by Bäder, is

is from three to five. Those that have been observed in a state of captivity have only laid two. In proportion to the bird the eggs are of small size, being not so large as those of a Swan; their shape is more or less elongated, with both ends of equal size, their colour is blueish white, but their external surface remains for some time soft and pasty, and a layer of dirt, which sticks to them after they have been sat upon, renders it impossible to clean the shell. The young present nothing particular



THE PELICAN (*Pelecanus onocrotalus*). ONE-SEVENTH NATURAL SIZE.

in their appearance, save that they are disgustingly filthy, nevertheless, their parents seem affectionately attached to them, and will suffer themselves to be captured rather than desert their charge.

THE WHITE PELICAN.

The WHITE PELICAN (*Pelecanus onocrotalus*), the commonest and most widely distributed species, is one of the largest members of the natatorial order. In this bird the general colour of the body is white slightly tinged with rose-red; the primary quills being dark brown; the front of breast

is yellow, upon the top of the head the feathers are much elongated, so as to form a long streaming crest. In young birds the mantle is brown mingled with grey, the under side dark grey. The eye is bright red, and the bare space around it yellow; the beak is grey speckled with red and yellow; the bag beneath the bill veined with yellowish blue; the feet are bright flesh-red. This species is from fifty-five to sixty-two inches long, and ninety to one hundred broad; the wing measures about twenty inches; and the tail about six inches and a half. The White Pelican principally inhabits the tropical climates of Africa and India, but is also found in the Mediterranean, on the extensive lakes of Hungary and Russia, and on the eastern rivers of Europe. In Southern Europe it appears about the end of April or beginning of May, returning to its winter quarters after the breeding season. Occasionally these birds miss their way and make their appearance in Germany, greatly to the astonishment of the inhabitants of the districts so visited. In Hungary they usually arrive in flocks of some four or six hundred individuals; these immediately disperse throughout the country for the purpose of breeding; after the period of incubation they again assemble in flocks previous to taking their departure. This species subsists on all kinds of fish, which it catches with facility, and with such sharp-eyed vigilance, that not even the smallest escapes its observation. It is unable to dive, and therefore only searches for food in small and shallow inlets of rivers. It occasionally ascends to some height in the air, and descriing a fish from on high, darts upon it with unerring aim.

The nest is placed on the ground, and is composed of coarse grass, lined with a softer kind. The two eggs are white. It carefully tends its young, conveying food to them in the singular pouch which, says Shaw, is one of the most remarkable appendages that is found in the structure of any animal. Though it contracts nearly into the hollow of the jaws, and the sides are not (in a quiescent state) above an inch asunder, it may be extended to an amazing capacity, and when the bird has fished with success, its size is almost incredible; it will contain a man's head with the greatest ease. In fishing, the Pelican fills this bag, and does not immediately swallow his prey, but when this is full he returns to the shore to devour at leisure the fruits of his industry. Audubon gives the following graphic account of the movements of an American species, *P. Americanus*, which is not only very similar in appearance, but until recently bore the same specific name as the bird above described, thereby creating considerable confusion between it and the White Pelican of the eastern hemisphere. "Ranged along the margins of the sand bar in broken array, stand a hundred heavy-bodied Pelicans, pluming themselves, and awaiting the return of hunger. Should one chance to gape, all open their large and broad mandibles, yawning lazily and luxuriously. But when the red beams of the setting sun tinge the tall tops of the forest trees, the birds rise clumsily on their short legs, and hastily waddle to the water and plunge into the stream. Lightly they float as they marshal themselves and extend their lines; and now their broad, paddle-like feet propel them onwards. In yonder nook the small fry are dancing on the quiet water. Thousands are there, and the very manner of their mirth making the water to sparkle, invites their foes to advance. And now the Pelicans at once spread out their broad wings, press closely forward with powerful strokes of their feet, drive the little fishes towards the shallow shore, and then, with their enormous pouches spread like so many bag-nets, scoop them out and devour them." These birds are altogether diurnal; when gorged, they retire to the shores of small islands in bays and rivers, or sit on logs floating in shallow water at a good distance from the beach, in all which situations they lie or stand close together. The White Pelicans appear to be almost inactive during the greater part of the day, fishing only after sunrise, and again an hour before sunset, though at times the whole flock will mount high in the air, and perform extended gyrations. In the south of Europe the chase after Pelicans is a favourite sport, and by the Arabs their flesh is considered not unpalatable.

THE GREAT TUFTED OR DALMATIAN PELICAN.

The GREAT TUFTED OR DALMATIAN PELICAN (*Pelecanus crispus*) is white, slightly tinged with greyish red, except upon the quills, which are black. In this species, the head-feathers are long and curly, forming a sort of helmet. The eye is silvery white, beak greyish yellow, bag beneath the throat blood-red veined with blue, and the foot black. The plumage of the young is greyish. The length of this bird is sixty-six inches, breadth one hundred and fourteen inches, the length of wing thirty inches, and tail eight inches. The habitat of the Great Tufted Pelican extends from the Black Sea over all the well-watered districts of Central and Southern Asia; a few penetrate annually into South China and North Africa, but in both these regions they are comparatively of rare occurrence.

The first example known of this bird was shot in 1828 in Dalmatia by Baron Fildegg, and it has been since found by Rüppell and Kittlitz in Abyssinia.

"It arrives," says the baron, "in spring and autumn, giving preference to the neighbourhood of Fort Opus, on the river Naronta, which is bordered with morasses. It comes through Bosnia, seldom alone, but generally in flocks. I have seen as many as twelve together hunting for fish. It is very cunning, and is extremely difficult to shoot."

No particulars are known respecting its habits, nidification, &c., which are supposed to resemble others of its family.



THE DIVERS (*Urinatores*).

THE birds belonging to this extensive order are all aquatic, and almost exclusively subsist on fishes, which they capture by diving. In conformity with this mode of life, they all present a general type of structure which is unmistakable. Their bodies are powerfully built, almost cylindrical in shape, and their legs placed far backwards. Their wings are short, feeble, and pointed, but little adapted to flight, and in many cases almost resembling fins, while their dense smooth plumage, which is impenetrable to water, admirably fits them for a residence in that element. Their beak is strong, hard, acutely pointed, and generally compressed at the sides; it is seldom much longer than the head, and its margins are usually sharp and well adapted for cutting. The foot is furnished either with three or four toes, of which the three in front are either strongly-webbed or furnished with lateral expansions of the skin, which render them efficient instruments of propulsion. The tail is often altogether wanting, or if present is always short, rounded, and generally formed of more than twelve feathers. There is much similarity in the coloration of their plumage, in which black and pure white predominate; in some species, however, variety of colour is not wanting. Generally speaking, these birds are all inhabitants of the sea; nevertheless, a few are to be met with only in inland lakes: some species have a very wide range in a great variety of climates; but the majority prefer the polar regions of the world, both north and south, from which, however, some of them migrate at stated intervals. The greater part of their lives is passed upon the surface of the water; indeed, it is only during the breeding season that they come upon dry land. Although many species fly with tolerable facility, in most instances the wings are too feeble to support the weight of their bodies, and are principally used almost like fins, to enable them to progress more rapidly when diving beneath the surface of the water, where they obtain the fishes and small crustaceans that constitute their usual food. A few diving birds build their nests solitarily; but by far the greater number congregated in innumerable hosts, and breed in company with each other upon rocks and islands that rise abruptly from the sea. The eggs are two in number.

The GREBES (*Podicipites*) are only to be met with in fresh water, and accordingly are classed by some naturalists in the immediate vicinity of the Coots, to which, as far as relates to the structure of their feet, they certainly bear a considerable resemblance. Their true position, however, we consider to be undoubtedly among the Divers. Their body is remarkably broad and squat; their neck long and moderately slender; their head small and elongated; their beak long, conical, and compressed at the sides, with incurved, sharp cutting edges, the lower mandible being slightly overlapped by the upper one. The legs are placed so far backward, that they seem to be attached quite to the posterior extremity of the body, and moreover are of very peculiar conformation. The tarsi are of moderate height, and so much compressed at the sides that the front of the instep presents a sharp smooth edge. The structure of the foot is likewise remarkable; of the three front toes, the exterior is as long or longer than the middle toe, while the inner toe is by far the shortest of the three; the hinder toe, which is slightly elevated, is a mere rudiment. The three front toes are connected by a web as far as the first joint, but beyond this point they are separated, although each is furnished on both sides with a broad fold of skin, which is not scalloped, but smoothly rounded off in front, where it is further strengthened by the broad flattened claws. The wings are small, short, and narrow, the second and

third quills being longer than the rest. The tail is altogether wanting, its place being occupied by a small bunch of fur-like feathers. The general plumage is everywhere very thick, and upon the lower part of the body so smooth and bright as almost to resemble satin, while on the head, neck, and hinder part of the body it has somewhat the appearance of hair. When in their nuptial plumage, the head of the adults is adorned with a remarkable collar or frill, developed from the sides of the face and neck, or provided with bunches of feathers, generally decorated with bright colours. Members of this family are to be found in the temperate zones of both hemispheres, beyond which they do not extend very far either to the north or south. Their usual habitat is on ponds or large sheets of stagnant water, and exceptionally on deep, slow-moving streams; but always where sedges and rushes are abundant. Occasionally, though rarely, they have been seen upon the sea. "Probably there are no birds," says Naumann, "better entitled to the name of water-fowl than the Grebes—at least we know of no others that do not on some occasions make their appearance on dry land. It is only, however, under the most urgent circumstances—as, for example, when wounded—that these approach the shore, and even then they keep so close to the brink that on the slightest alarm they can at once plunge into their proper element. It would seem that whatever they do must be done in the water; they cannot even rise upon the wing without a preliminary rush over the surface of the lake: from dry land they cannot commence their flight. Their whole life is divided between swimming and diving; and even when other water-birds go on shore to sleep, the Grebes repose floating on their liquid bed. When thus sleeping upon the tranquil water, they float as buoyantly as if they were made of cork, their legs raised to the edges of their wings, and their head comfortably buried among the feathers between their back and shoulder. Should, however, a storm disturb their rest, and the boisterous elements drive them towards the shore, they at once turn round to face the blast, and are generally able, by the active movement of their paddle-like feet, to maintain themselves in the same place.

The conformation of their bodies, their tapering shape, small heads, sharp beak, and the very backward position of their feet, enable them to dive with wonderful facility; in fact, when under water they make their way more swiftly than even when swimming at the top. A man upon the shore would find it very difficult to keep pace with a diving Grebe, as, aided by wings and feet, it shoots onwards with the velocity of a rocket. When flying, their long neck is stretched out straight forwards and their feet backwards, while their small wings, by the rapidity of their movements, carry them very quickly through the air. In the absence of any tail, they steer their course by means of their feet, and are able not only to direct but to change the course of their flight with surprising facility; at the end of their journey they come down obliquely upon the surface of the water, into which they fall with a very audible splash. When alarmed they always instantly dive, and nothing but the utmost extremity of danger will compel them to take wing. The food of these birds consists of small fishes, insects, frogs, and tadpoles, in search of which they dive to the very bottom of the pond, but always bring them to the top before swallowing them. In their manner of breeding, the Grebes are in many respects peculiar. They live together in pairs, the male and the female exhibiting the greatest affection towards each other, keeping each other company even during their migrations, and always returning together to the same pond. When the time arrives, they construct a floating nest, which, instead of being built of dry materials, as in the case of other birds, is merely a mass of wet weeds, in which the eggs are kept not only constantly damp, but absolutely in the water. The weeds used in building the nest are procured by diving, from the bottom of the pond; these are put together in the most slovenly manner, so as to resemble a floating heap of rubbish rather than a nest, and are then fastened to some old upright reeds. The number of the eggs varies from three to six; they are of elongated shape, and at first of a greenish white colour, but they soon become dirty, and are then of a yellowish red or olive-brown tint, sometimes marbled.

The male and female sit upon the eggs alternately, but the female has the greater share in the business of incubation, the male often swimming around the place apparently for the purpose of keeping her company. Should, however, both be obliged to leave the nest at the same time, they carefully cover the eggs with a mass of half-rotten water-plants, brought up from the bottom for the purpose. In about three weeks the young are hatched, even from eggs which during a great part of the time have been lying in the water. From the first moment they are able to swim, and in the course of a few days to dive; they are, however, constantly accompanied by their parents, who often give them shelter under their wings. Having once quitted the nest, the young ones seldom return to it, a comfortable resting and sleeping place being afforded to them on the backs of their parents.

THE CRESTED GREBE.

The CRESTED GREBE (*Podiceps cristatus*), the stateliest member of the family, is a bird of considerable size, measuring from twenty-five to twenty-six inches in length, and from thirty-six to thirty-seven in breadth. The length of the wing is seven inches. During the time of its courtship this bird is furnished with a very remarkable head-dress, consisting of a large bunch of long feathers, divided above into two horn-like appendages, and also with a prominent collar or frill of hair-like plumes, on each side of the upper extremity of the neck and sides of the head. The upper parts of its body are of a shining blackish brown, a bright patch on each wing; the region of the cheeks and the throat are white; the collar around the neck rust-red, with a blackish brown margin. The under part of the body is of a glossy satiny white, speckled upon the sides with rusty red and dark grey. The eye is carmine-red, the bridles red, the beak pale red; the outer aspect of the tarsus is dark horn-colour, and the inner side yellowish grey. In its winter garb, the tufts upon the head and the collar are not developed, the brown upon the upper part of the body is mingled with deep grey, and the rust-red of the collar as well as the rust-brown of the sides is duller. The female is distinguishable from the male by her smaller size, but not by any difference in her colour. The young birds are less beautiful than are the adults in their winter dress, and are striped about the head and neck. The nestlings are at first clothed in greyish brown, streaked with black.

The Crested Grebe is to be met with wherever suitable pieces of water exist over all parts of Europe south of 60° north latitude. It is by no means scarce in Germany, and is still more abundant in lakes further to the south. In England it is principally met with in Shropshire and Lincolnshire, and is reckoned as a stationary bird even in Zetland. In the northern countries it makes its appearance early in the spring, generally in April, or shortly after the melting of the snow, and remains until October or November, when it retreats to Southern Europe and Northern Africa. In Greece and Spain it remains all through the winter; indeed, the numbers to be met with in those countries are considerably augmented by arrivals from localities further north. In North-western Africa it likewise makes its appearance at regular intervals, but in Egypt only a few solitary birds are to be met with. In Central and Northern Asia it is quite as common as it is in Europe, and there its range seems to extend from Siberia to Southern China and Japan. It is likewise abundant in North America, extending from the north of that continent to the southern provinces of the United States. In early spring these birds always make their appearance in pairs, but towards the autumn large parties of them may be seen together, consisting of fifty or sixty individuals, who keep company with each other during their migration southwards. In their migrations it is generally understood that these birds only travel by night, and that wherever large lakes or rivers are to be found, as also along the sea-coast, they make their way principally by swimming. During the summer season the Crested Grebe takes up its abode on extensive lakes, where reeds and other water-plants are abundant. Their powers of swimming and diving are quite wonderful. According to Naumann's observations, this

Grebe will dive in the course of half a minute to a distance of two hundred feet. Its flight, too, when it thinks proper to take wing, is tolerably swift ; it always proceeds in a straight line, and the whirring noise made by the rapid motion of its wings is audible at some distance. In its behaviour it seems to be the most circumspect and the shyest member of the family, and is not easily approached, more especially as it generally keeps in open water, where it can see to a distance. If surprised when in the vicinity of a bed of reeds, it immediately takes refuge among them, but only so long as to enable it again to plunge into deep water ; if pursued it immediately dives, and when it comes up again to breathe, allows only its beak to appear above the surface, and as soon as it has taken breath dives again, until it has placed itself quite beyond the reach of danger.

The male and female are deservedly attached to each other. Should one of them accidentally stray to a distance, the other never ceases to call the wanderer back with anxious care ; they generally swim about in close companionship, and often make their voice heard as they playfully caress each other. At the commencement of the breeding season each male zealously resists the intrusion of another pair within the area he has selected, so that where several pairs have taken possession of a piece of water, desperate battles are frequently fought, at the end of which the vanquished combatant has generally to have recourse to his wings in order to escape from the fury of the victor. It is only when the reeds and sedges have attained a certain height that a pair sets seriously to work upon the construction of their nest, which is always placed in the vicinity of a group of tall reeds or rushes, and frequently at a considerable distance from the shore. The nest, when constructed, is about a foot in diameter and six inches high, its cavity is extremely shallow, and it becomes gradually pressed flatter and flatter by the weight of the laying birds ; even when completed, the fabric has very little the appearance of a nest, but rather resembles a heap of rotten weeds casually blown together by the winds, and left to float on the top of the water. It is wonderful that such a wet lump should bear the weight of the bird that sits upon it, and still more astonishing that it is not upset, as its occupant steps on and off a structure that possesses so little buoyancy. The normal number of eggs usually laid in this strange nest may be stated at four, sometimes there are five, sometimes only three. Out of seven nests examined by Holtz, four of them contained four eggs, one five, one three, and one two. The colour of the eggs is at first pure white, which soon, however, changes into a dirty yellow. The male and female sit upon the eggs alternately, with an unwearying assiduity, that in their case is indispensable, seeing that the eggs are actually half immersed in water ; and on examining a nest from which the sitting bird has been recently driven, it will be found that not only the eggs, but the entire nest is warm throughout. Both manifest extreme attachment to their young brood ; should a stranger approach, they hastily cover it up with weeds, and only retire to a little distance, returning to their charge so soon as danger has passed. It is asserted that if before incubation has commenced the eggs are abstracted one at a time, the female will lay twenty eggs or more in succession. As soon as the young are hatched, they are introduced by their parents to their proper element, and carefully defended, more especially by the male bird, who seems to take upon himself the duty of a sentinel. The nestlings are fed with insects and such small diet, at first put into their beaks, but afterwards only placed before them on the surface of the water. They soon, however, learn to dive in search of small fishes, and do not long require the supervision of their elders. The young, more especially at an early period, are elegant little creatures. "It is a treat," says Jäckel, "to watch the little family as now one, now another of the young brood, tired with the exertion of swimming or of struggling against the rippling water, mount as to a resting-place on their mother's back ; to see how gently, when they have recovered their strength, she returns them to the water ; to hear the anxious plaintive notes of the little wanderers when they have ventured too far from the nest ; to see their food laid before them by the old birds ; or to witness the

tenderness with which they are taught to dive. It is only when they are eight days old that they are strong enough to enter upon this last important part of their education, which is commenced in the following manner :—The mother bird at first swims towards her little flock two or three times, holding in her beak the proffered food ; but as they advance to receive it she gradually retires before them, and at last dives with it again and again, thus tempting the timid little creatures to follow her, and



THE CRESTED GREBE (*Podiceps cristatus*). ONE-FOURTH NATURAL SIZE.

always at the end of the performance allowing the best swimmer to obtain the tempting prize as a reward for its exertions." The flesh of these birds is quite uneatable, but great quantities of them are destroyed annually on account of their skins.

THE LITTLE GREBE.

The LITTLE GREBE (*Podiceps minor*) is much more plentiful than the species last described. It is a beautiful bird, measuring nine or ten inches in length and seventeen or eighteen in breadth, the

length of its wing being four inches. When in its nuptial dress, the plumage of the upper part of the body is brilliant black shimmering with brown, the under parts being greyish white, clouded with a darker shade; the throat and a place in the front of the eye are black; the head, sides of the neck, and throat, chestnut-brown; the eye is reddish brown; the bridles yellowish green; the beak yellow at its base and black towards its apex; the external aspect of the foot is blackish, internally it is of a clear horn-colour. In its autumnal plumage the upper parts of the body are more of a brownish grey, the under surface satiny white; the head and neck bright grey.

The range of this bird is pretty nearly the same as that of the species last described; it is not, however, so numerously met with during the winter season. It makes its appearance in Germany about the end of March, and remains in that country so long as the waters are free from ice; but during the winter it takes up its abode in the south of Europe. In Great Britain it is met with as far north as the Hebrides, and in the southern counties of England may be seen throughout the year.

It usually selects for its residence some large pond well provided with reeds and rushes, and it is also occasionally to be found in morasses and other swampy localities. It seems to avoid clear water; its food, which consists principally of insects and their larvæ, being more abundantly met with in ditches and muddy places. In its habits and mode of life it closely resembles other members of its family; it seems, however, to be more active than the larger species, and uses its feet with more facility in running.

In swimming and diving it may be said to excel even its congeners, but its powers of flying are very limited, owing to the shortness of its wings. Its flight, indeed, is said by Naumann to resemble that of a grasshopper. In summer time it is very shy, and can only be approached with difficulty, but in the winter its shyness diminishes, so that it will even come near villages, and at this season it frequently falls a victim to its own carelessness. When alarmed it immediately dives, and if further threatened with danger, secretes itself in the water under the shelter of the herbage, leaving nothing but its beak visible above the surface, and thus it will remain until all cause for apprehension is removed. Its voice is a short piping note that sounds like "bib" or "bibi," and this during the pairing season is repeated so rapidly that it sounds something like a "shake" upon some musical instrument.

The nest of the Little Grebe is always placed among water-plants, but is never hidden from view; more commonly, indeed, it is rather a conspicuous object; it is, however, invariably removed from the sides of the pond. In its appearance, it is just as rudely constructed, as wet and uncomfortable-looking as that of the species last described. In this floating cradle the female, towards the end of April or the beginning of May, lays from three to six elongated eggs, the colour of which seems to depend upon that of the plants of which the nest is composed. Upon these eggs, both the male and the female sit alternately for twenty or twenty-one days. As soon as the young are hatched they betake themselves to the water, where they are taught and tended by their parents in the same manner as those of the Crested Grebes described above.

The DIVERS (*Colymbi*) may be regarded as the marine representatives of the Grebes, from which, however, they are at once distinguishable by their larger bodies, shorter neck, more bulky head, and stronger beak. These birds are fully webbed; their wings are short, and their quills, the second of which is the longest, hard and stiff; the tail is composed of from sixteen to twenty close-set feathers. The coloration of the thick warm plumage varies considerably at different seasons of the year. The number of species belonging to this group is very limited; of these only three are recognised as belonging to Great Britain; namely, *C. glacialis*, *C. arcticus*, and *C. septentrionalis*. The members of this group are essentially sea-birds, only visiting rivers or lakes of fresh water during the

breeding season or in the course of their winter migrations. Like the Grebes, they transact all their business in the water. They swim with the utmost ease to very considerable distances, and rest themselves by lying as it were flat upon the surface of the sea ; sometimes, however, they sink their bodies to such a depth that only a small portion of the back is visible. Now they are seen gliding leisurely along over the tranquil waves, and now with the rapidity of lightning they disappear apparently without the slightest effort, and without causing any perceptible disturbance in the water. No sooner are they submerged, than they stretch themselves out to their full length, their feathers become flat and smooth, their wings are pressed close to their sides, and thus presenting a shape beautifully adapted to their work, they shoot through the water with arrow-like speed, now in one direction, now in another ; sometimes swimming along close beneath the surface, sometimes plunging to a depth of several fathoms in pursuit of the fishes upon which they feed.

“To see them from some promontory,” says Mudie, “against which the air and the sea are setting full wind and tide, and driving before them myriads of herrings and other fishes, is a glorious sight. They dash along the surface, they dart under it, they bounce up again, they bore through the advancing waves, and when the billow breaks in foam and thunders over them, and the spectator naturally concludes they are buried for ever in the deep, up they spring to the surface of the unbroken water farther from the land, as though exulting in the fury of the elements.” This facility for swimming and diving they enjoy from their earliest infancy, and to it they trust as a means of escape from danger. It is seldom that they set foot upon dry land ; indeed, even when they visit the shore they can scarcely be said to do so, they might rather be said to slide out of the water on to the beach ; as to walking, in the ordinary acceptation of the term, that is quite out of their power—indeed, they are unable to support themselves in an upright position ; by the efforts of their feet and wings, aided by their neck and beak, they creep, or rather tumble over the ground until they regain their proper element. Their powers of flight are very limited, nevertheless it is a pretty sight to see them plunge from some high cliff into the waters beneath, the efforts of their wings only serving to give an oblique direction to their downward career, as they shoot headlong into the deep, and immediately disappear beneath the waves.

The Divers appear to avoid the company of other birds, and indeed seldom associate with those of their own kind, except during the breeding season—at which time they may be seen in pairs. Their food consists exclusively of fishes overtaken in the water or brought up from the bottom of the sea ; of these they seem to prefer the mid-sea swimmers, but flat fishes, such as small plaice and soles, form likewise a considerable part of their diet. Graba informs us, that from his window he has often seen them bring up flounders of considerable size, in disposing of which they showed considerable dexterity. If too large to be swallowed whole, they were dropped into the water and devoured piecemeal. Even a herring seemed to be a somewhat unmanageable morsel ; but the smaller fry were at once made away with. When the breeding season approaches, all the different species of Divers betake themselves to lakes of fresh water, at some little distance from the coast, and sometimes at a considerable altitude above the level of the sea. Their harsh-sounding cry is now uttered more frequently than usual, especially towards evening, at which time they come down to the shore and throw themselves from the rocks into the ocean, in order to procure a supply of food. Their nest is generally built upon some small island in the middle of the lake or pond, or should such a situation not offer itself, upon the margin, but always close to the water ; it is rudely constructed of sedge-grass and reeds, negligently heaped together and frequently without the slightest attempt at concealment, inasmuch as the sitting bird is rather a conspicuous object, and may be seen from a considerable distance. Upon this rude nest the female lays two eggs of an elongated shape, having a strong, coarse-grained, but somewhat polished shell. The two sexes take their turn in the incubation of the



COMMON LOON

GAVIA IMMER

eggs, and both labour with equal zeal in the feeding and rearing of the young. The eggs are laid towards the end of May, and towards the end of June young birds may be found in the nests ; but the exact period of incubation is not as yet accurately determined. Should the lake on which the nest is placed be well stocked with fish, both the parents remain constantly with their progeny ; but if there is a scarcity of such a supply, and the old birds have to resort to the sea for food, they do so by turns, each of them most probably bringing to the nest a share of what they capture wherewith to feed their nestlings. These last, however, as soon as they are hatched begin to show considerable aptitude for the chase, and are able to procure food for themselves betimes. When they are fully fledged they betake themselves to the sea.

THE GREAT NORTHERN DIVER.

The GREAT NORTHERN DIVER (*Colymbus glacialis*) is a very striking bird, measuring about three feet in length and five feet across the wings. The length of each wing is sixteen inches and tail two inches and a quarter. In its summer plumage it is principally black, enlivened with white spots ; on the head and neck the feathers are greenish black, the latter being traversed by a broad longitudinal band of black and white ; a similar stripe is situated on the fore part of the neck. The sides of the upper breast are black striped with white ; the rest of the under surface is a rich satiny white. The eye is light brown, and beak black ; the exterior of the tarsus is grey, the under surface of a reddish flesh-colour. In its winter dress the upper part and sides are blackish, and without the white spots, and the under surface white ; the breast black, streaked with white. The young are clad in a similar garb, but are without the white streaks upon the breast.

The Northern Diver is common on all the coasts of the North Sea, as well as on the inland lakes of high latitudes. It appears on the coast of Great Britain in the autumn, and remains during the winter, going at the breeding season ; except at that time, it lives at sea, following the shoals of herrings and sprats ; it also resorts to arms of the sea and sandy bays, floating lightly, with its body deep in the water ; when alarmed, it swims with astonishing swiftness, and endeavours to escape by diving.

These birds breed on the Faroe Islands. Respecting their manner of nidification Mr. Porter, who observed them closely during the nesting season in Iceland, says :—"The Northern Diver breeds on the lochs of fresh water. In the nests I examined, a single egg was deposited. On the bare ground, but just out of water-mark, rather under a rugged bank on some broken ground, I was successful in finding two nests. I allowed the single egg to remain in one of them in the expectation that another egg would be laid to it, but was disappointed. The old bird was very shy, and always left the egg on our approach, when at a great distance off, taking to the water and keeping so far from the side as not to be within shot." In the breeding season they frequent islands, making their nests of dead herbage near the water's edge. The eggs, usually two in number, are dark olive-brown, with a few umber-brown spots, and are three inches six lines long by two inches three lines broad. The mother lies flat on the eggs, and, if disturbed, pushes herself along the ground with her feet, diving as soon as she reaches the water. The young are able in a day or two after birth to follow their mother to the water, and are able to swim and dive well. They are fed during the first fortnight with food from the crop of their parent. The voice of this bird is loud, plaintive, and much varied in tone.

Montagu tells us that, "A Northern Diver taken alive was kept in a pond for some months. In a few days it became extremely docile, would come at a call from one side of the pond to the other, and would take food from the hand. The bird had received an injury in the head which had deprived one eye of its sight, and the other was a little impaired ; but, notwithstanding, it could, by incessantly diving, discover all the fish that was thrown into the pond. In default of fish it would eat flesh. It

is observable that the legs of this bird are so constructed and situated as to render it incapable of walking upon them. When the bird quitted the water, it shoved its body along upon the ground like a seal, by jerks, rubbing the breast against the earth; and returned to the land in a similar manner. In swimming and diving, the legs only are used and not the wings, as in the Guillemot and Auk tribes; and by their situation so far behind and their little deviation from the line of the body, it is enabled to propel itself in the water with great velocity in a straight line, as well as turn with astonishing quickness." The plumage of the Northern Diver is close, and its skin tough, on which account it is much used by the inhabitants of northern countries in the manufacture of comfortable articles of clothing. The flesh is hard and of a rank fishy flavour.

THE BLACK-THROATED DIVER.

The BLACK-THROATED DIVER (*Colymbus arcticus*) is smaller than the preceding species, but very much like it both in the colour and markings of its plumage. In its nuptial costume the upper part of the head and hind neck are deep ashy grey, the back and wings black, a space upon the back and another upon the hinder part of the wing are spotted with white, while upon the fore part of the wing is another space speckled with blue spots. The side of the neck presents a longitudinal black streak, the fore neck has a transverse white band, and the sides are longitudinally marked with black. The under side is white. During the winter, the head and nape are grey, the rest of the feathers on the upper surface black with white borders; the lower parts of the body are white, and the sides of the crop striped black and white. In young birds the latter markings are wanting. The eye is light brown, and the beak black. The foot is grey at its exterior, and flesh-red on the inner side. This species is from twenty-eight to thirty inches long and from fifty to fifty-two broad; the wing measures from fourteen to fifteen inches, and the tail from two inches and a quarter to two inches and a half. The Black-throated Diver is rare on our southern coasts; on the northern shores of our island it begins to appear about September. The majority of these depart about April, although a few remain to nest in the northern parts and islands of Scotland. We are indebted to Mr. Selby for the following account of its breeding, as observed by himself during the course of an excursion in Scotland.

"This beautiful species, whose breeding station has never before been detected, we found upon most of the interior Sutherland lochs. The first we noticed was at the foot of Loch Shin, where we were so fortunate as to find the nest, or rather the two eggs upon the bare ground of a small islet, removed about ten or twelve feet from the water's edge. The female was seen in the act of incubation, sitting horizontally, and not in an upright position, on the eggs. In plumage she resembled the male, and when fired at immediately swam or rather dived off to a short distance. Our pursuit after them was, however, ineffectual, though persevered in for a long time, as it was impossible to calculate where they were likely to rise after diving. Submersion frequently continued for nearly two minutes at a time, and they generally reappeared at about a quarter of a mile's distance from the spot where they had gone down. In no instance have I ever seen them attempt to escape by taking wing. I may observe that a visible track from the water to the eggs was left by the female, whose progress upon land is effected by shuffling along upon her belly, propelled by her legs behind. On the day following (May 31st) Mr. J. Wilson was fortunate enough to find two newly-hatched young ones in a small creek of Loch Craïgie, about two miles and a half from Lairg. After handling and examining them, during which the old birds approached very near to him, he left them in the same spot. Accordingly, on the Monday morning we had the boat conveyed to the loch, and on our arrival soon descried the two old birds, attended by their young and apparently moving to a different part of the loch. Contrary to their usual habit at other times,

they did not attempt to dive on our approach, but kept swimming around their young, which, from their very tender age, were unable to make much way in the water. The female could only be distinguished from the male by a slight inferiority of size, and both were in full adult plumage. We afterwards saw several pairs upon various lochs, and upon Loch Kay, a pair attended by two young ones nearly half grown. When swimming they are in the constant habit of dipping their bill into the water, with a graceful motion of the head and beak."

Mr. Dunn, who observed these birds in Norway, tells us that, "The eggs have a very rank fishy taste, but are much sought after by the Lapps. After the young are hatched, both male and female are very assiduous in bringing them food, and may be seen flying at a vast height, with fish in their beaks, from one lake to another; on arriving over the lake where they intend to alight, they descend very suddenly in an oblique direction." The cries of this Diver are very peculiar during the breeding season, and may be heard at a great distance. The voice is said to be very melancholy, and to resemble the cry of a human being in distress.

THE RED-THROATED DIVER.

The RED-THROATED DIVER (*Colymbus septentrionalis*), as the smallest of these three species is called, is only from twenty-five to twenty-six inches long, and from forty to forty-three broad; the wing measures from ten inches and a half to twelve and a half; and the tail two and a half to three and a half inches. The colour of this bird is ash-grey upon the head and on the sides of the neck; the back of the neck is striped with white; the front of the throat bright chestnut-brownish red; the back is brownish black; the under side white; the front and sides of the breast are black, with longitudinal rows of spots. In their winter dress the feathers of the back are tipped with white, and the region of the throat is white. In young birds the colours of the plumage are indistinct. The eye is light brownish red; the beak black; the foot is dark brown, mingled with blueish grey, the latter colour being deepest on the web between the toes. This bird inhabits the high northern latitudes of the eastern hemisphere, and is more especially met with upon the coasts of Greenland, Spitzbergen, and of European and Asiatic Russia. It is likewise common in the Faroe Islands, as well as in the Orkneys and the Hebrides. In winter time it extends its range further south, and may be found on the coasts of Denmark, Germany, and Holland, as well as upon the shores of Great Britain. Its habitat may be said to stretch from 60° to 70° north latitude. The Red-throated Diver is common on the shores of Great Britain and Ireland in the winter season, and about the mouth of the Thames is known by the name of the Sprat Loon, on account of its following the shoals of sprats. It remains during winter to breed in Scotland, frequenting the inland Highland lakes, as well as the Orkney, Hebrides, and Shetland Islands. The neatly-made nest is placed near the margin of the water, sometimes on the bare beach, and sometimes among herbage, and is formed of such plants and leaves as are easily procurable. The eggs, usually two in number, are of an elongated oval shape, brown in colour, and dotted with dark amber-brown. The male remains near the nest, and is said occasionally to assist in brooding. When an intruder approaches, the female continues to sit till her foe is close at hand, when she starts off, plunges into the water, and usually flies off or sometimes swims anxiously about in company with her mate; if deprived of their eggs the loud lamentations of the parents may be heard for several evenings; the notes are harsh, and, according to Macgillivray, resemble those of the Gannet. The young take to the water as soon as they leave the egg, and continue with their parents until able to use their wings, when all fly off to the sea. Mr. Low, in his "Natural History of Orkney," says, "This bird continues with us the whole season, builds on the very edge of a lake in the hills of Hay, and lays two eggs; its nest is placed so that it can slip from it into the water, as it can neither stand nor move on land, but can make very quick way at sea; flies well,

and commonly very high ; makes a vast howling and sometimes croaking noise, which our country folks say prognosticates rain, whence its name with us of the 'Rain Goose.'” Mr. Dunn, who saw this bird in Norway, thus writes to Mr. Yarrell : “This Diver is far more common here than the Black-throated. On the west coast of Norway it is very abundant from the Naze to the North Cape ; in the Lapland Alps, in the Dofre Field, and in the interior of Sweden it is equally numerous. In August, 1838, I saw, on the great Tornea Lake, thirty in a flock, and all old birds. Although so common, it is rarely one sees the young before they are able to fly ; their habits and feeding are similar to those of the Black-throated Diver. Their cries are very mournful and melancholy. During the breeding season, while on the wing, they utter frequently a sound like the word ‘kakera-kakera,’ by which name they are called in many parts of Scandinavia.”

The AUKS (*Alcidæ*) are distinguishable by their strongly-built body, short neck, large head, short, almost rudimentary wings, short tail, strong, compact, three-toed, broadly-webbed feet, and rich, thick, and downy plumage, which is similarly coloured in the two sexes, but varies considerably at different seasons.

The LOONS (*Uria*), while they present the general characters above-mentioned, have wings of moderate length, in which the first quill is the longest, and a short tail composed of twelve feathers. Their beak, which is of moderate length, is vaulted above, somewhat angular beneath, and much compressed and furrowed upon the sides.

The various members of these groups are all inhabitants of northern seas and of the creeks and bays with which they are contiguous ; indeed, except in the winter time, they seldom pass much beyond the precincts of the frigid zone. They are all strictly sea-birds ; indeed, it is only during the breeding season that they take up their abode on terra firma ; at all other times they live exclusively upon the water. They swim and dive with remarkable facility ; their powers of flight are moderately good, and although they do not willingly walk, they are able to do so tolerably well, treading upon the soles of their feet, and not shuffling along upon their tarsi. Their food consists exclusively of crustaceans and fishes, which they are able to bring up from a considerable depth. They live and feed together, exhibiting considerable sociability, and during the breeding season they assemble in flocks, amounting in some species to the number of several hundred thousand pairs, and thus become to the inhabitants of the extreme north of inestimable importance. In many settlements on the coast of Greenland they, next to the seals, constitute the most important article of food, and famine would be the inevitable result of their ceasing to visit their usual breeding-places in their wonted numbers.

THE GREENLAND DOVE, OR BLACK GUILLEMOT.

The GREENLAND DOVE, or BLACK GUILLEMOT (*Cephus grylle*), one of the best-known members of its family, may be regarded as the representative of a distinct group, and is easily recognisable by its small size, and comparatively long, slender, straight beak, which curves downwards at the extremity of the upper mandible. The legs are placed very far back ; the wings are small and pointed, but furnished with strong quills ; the short, rounded tail is composed of from twelve to fourteen feathers. The plumage is thick, and of velvety texture ; its coloration varies considerably at different ages and at different seasons of the year. When in full dress at the commencement of the breeding season, the plumage is glossy black, shaded with green, and enlivened by a white patch upon the wings. The eye is brown, beak black, and foot coral-red. In its winter garb the under side is spotted black and white ; in young birds the upper parts are blackish, the wings being white striped with black, the belly white, and the rest of the body spotted with blackish grey. The length of this species is thirteen inches,

breadth twenty-two inches, length of wing six and a half inches, and of tail two inches. The range of the Black Guillemot extends from about 80° to 53° north latitude : within this zone it is met with on every sea-coast. These birds are seldom seen assembled in large numbers ; they generally arrive in small parties, or in pairs. It is only when the sea is frozen over, that they congregate together around any openings that may be met with in the ice, and as soon as opportunity offers, they again disperse, and distribute themselves among their usual haunts. As the severity of winter increases, they migrate further towards the south, and it is only at such seasons that they occur upon our own shores. There is always something cheerful in the aspect of these birds, whether they are seen sitting upright on the rocks, or swimming and diving in their proper element ; they float upon the water light and buoyant, and as they row themselves gracefully along, their bright red feet often become visible above the surface. When they dive, their movements are equally graceful ; a single backward stroke of their feet raises their tails into the air, and instantly they disappear, without any visible disturbance of the water around them. As soon as they are fairly submerged, they partially open their wings, and by the aid of these, as well as of their feet, they shoot along with great rapidity, remaining under water about two minutes before they again show themselves. When the sea is tranquil and the water clear, their course may be easily traced for a considerable distance, but we think that some observers have over-estimated the depth to which they are able to plunge. Their flight is tolerably good, although, owing to the shortness of their wings, they are compelled to make such rapid strokes as to produce a whirling sound. When about to fly, they rise from the sea with some little difficulty, and have to make considerable efforts in order to get the necessary impetus ; but so soon as they have attained a certain elevation, they can mount rapidly to the top of the cliffs, upon which they frequently take their station. Their voice differs considerably from that of the generality of their congeners ; instead of the usual scream it is rather a whistling note. About the beginning of March, they begin to assemble at their breeding-places in small flocks, seldom consisting of more than thirty or forty together, although millions of other birds may resort to the same locality ; and here each pair selects a suitable rent or fissure in the rock, at a short distance from the entrance of which, towards the end of April or beginning of May, the female lays her two eggs upon the bare stone. The eggs are tolerably large, with coarse lustreless shells of a dingy whitish or blueish green colour, spotted with ashy green, and streaked with brown or blackish brown patches. Should the eggs first laid be removed, as they very frequently are when the breeding-places are accessible, the breeding pair will lay a second time, but usually only a single egg. The parents take their turns in the task of incubation, towards the close of which they sit so assiduously that they will suffer themselves to be captured rather than desert their charge. After the lapse of twenty-four days, the young make their appearance, clad in a thick covering of greyish down ; at first they are diligently fed upon sand-worms, small molluscs, sand-eels, and similar fare, but they are soon able to fish for themselves ; they swim well from their earliest infancy, but are not able to dive until they are fully fledged. In Greenland and Iceland, great numbers of these birds are killed and eaten, the Norwegians, however, are content to take their eggs. Their flesh has a strong flavour of train-oil, still it may be rendered eatable if properly cooked ; in Lapland, the young birds are often brought to table ; the feathers, also, are used to fill beds, but they are chiefly profitable on account of their eggs, which, although they have a very peculiar taste, are eagerly sought after. In the British Isles, according to Macgillivray, the Black Guillemot has no breeding-places south of the Tweed and Solway ; the most southern point being the Bass Rock at the mouth of the Firth of Forth, and the Isle of Man.

The TRUE GUILLEMOTS (*Uria*) are larger than the above birds, but very similar in structure ; their beak is elongated, of moderate length, straight and sharply-pointed, slightly vaulted above, and

decidedly angular beneath ; its sides are compressed, and edges somewhat drawn in ; the foot resembles that of *Cephus grylle*, but the toes are proportionately longer ; the wings are also smaller and more pointed, and the tail, composed of twelve feathers, shorter ; the general plumage is thick and compact ; the under surface is usually white and almost fur-like, whilst the upper parts of the body are more or less dark brown. The Guillemots principally inhabit northern latitudes, at certain seasons appearing in more temperate climates ; except during the period of incubation they seldom visit the land, but pass their whole time upon the ocean. They are excellent swimmers, and dive well, using both feet and wings for their propulsion, so that their movements beneath the water are performed with admirable rapidity and precision ; their flight is rapid but hurried, and, owing to the shortness of their wings, whirring and noisy. So numerous are these birds in the neighbourhood of their breeding-places, that (more especially if it be a rock of a pyramidal form) they resemble at a distance a great swarm of bees. When descending into the water to fish for food, their wings are kept quite straight and motionless. Except during the breeding season these flights are not often attempted, at other times they seldom leave the water, or if induced to take a short excursion, by way of exercising their wings, they soon drop down again into the friendly shelter of the waves. They are almost unable to progress upon dry land ; occasionally, however, they may be seen upon the beach, half walking and half flying, with a very peculiar gait, somewhat resembling dancing. Anyone who has visited the breeding-places of these birds will no longer wonder that they have in all languages received names expressive of foolishness and stupidity. When in the water they will often let a boat come close to them without showing the slightest distrust of its dangerous occupants, and on dry land, such is their unconsciousness of harm, that they will allow a man to come within a few steps of them without stirring from the spot. This so-called stupidity or indolence is, however, easily explicable. Of man, who seldom visits their wild resorts, they have no experience, and consequently have not learned to fear him ; but should a Falcon or an Eagle make its appearance, even in the remote distance, thousands of them at once take wing, and hastily retreat to some place of safety. The cliffs on which they build present a remarkable spectacle ; rocks abounding in rifts, cracks, shelves, and ledges, stretching along the shore or rising abruptly from the sea, afford them the situations they prefer ; if isolated, solitary, and accessible to none but winged creatures, so much the more eligible. There, about the end of March or beginning of April, they may be seen to congregate, their numbers gradually increasing until countless multitudes throng every available situation. Thousands and hundreds of thousands swarm upon the ledges, shelves, and projections, wherever these are to be found, and range themselves in rows like a regiment of soldiers, all with their white breasts turned towards the sea, hundreds of thousands more may be seen flying off from the ledges of the cliffs down to the water below, while multitudes, equally innumerable, are as constantly flying upwards from the sea to the cliff, and whole fleets are swimming and diving in the waves beneath. Strange to say, although every place affording foothold is crowded to excess, the utmost order and decorum everywhere prevail ; each seems desirous of assisting and accommodating the other, so that disputes or battles seldom occur. The countless pairs of which this vast assembly consists exhibit the utmost constancy and attachment, and may be seen before the eggs are laid, keeping constantly together, caressing each other with their beaks, and evincing the greatest affection. They fly off together to the sea, fish together for a supply of food, and then return to their nesting-place, where they subsequently share the duties connected with the incubation of the eggs, and the procuration of food for their progeny. The female lays but a single very large egg, which is shaped like a pegtop, and thus, by a simple but beautiful contrivance, is prevented from rolling off the narrow ledge on which, without any other protection, it safely rests. The egg is provided with a coarse shell, spotted and streaked with dark markings upon a light ground, but so variable are the colours, that out of a hundred scarcely two will be found exactly alike.

The period of incubation extends over from thirty to thirty-five days. When the young makes its appearance it rather resembles a ball of greyish black wool than a bird ; its coat of down soon disappears ; its growth is rapid ; and in about a month it is completely fledged.

THE COMMON OR FOOLISH GUILLEMOT.

The COMMON or FOOLISH GUILLEMOT (*Uria troile*), in its nuptial garb, is bright brown upon the back and on the fore parts of the neck ; the points of the feathers upon the upper arm are white, forming



THE COMMON OR FOOLISH GUILLEMOT (*Uria troile*). ONE-FOURTH NATURAL SIZE.

a conspicuous band. The under surface is white ; the sides are striped with brown. In the winter dress both the fore part of throat and hinder part of cheek are white. The eye is brown, beak black, and foot grey. This species is seventeen inches and a half long, and from twenty-seven to twenty-eight broad ; the wing measures three inches and the tail two and a half. The Common Guillemots are to be seen around the British coast at all seasons of the year. About the beginning of May they assemble in their breeding-places on the rocks, which are also frequented by other birds for the same purpose. "From the numbers that congregate," observes Yarrell, "and the bustle apparent amongst them, confusion of interests might be expected ; but, on the contrary, it will be found that the Guillemots occupy one station, or line of ledges on the rocks, the Razor-bills another, the Puffins a third, Kittiwake Gulls a fourth, whilst the most inaccessible pinnacles seem to be left for the use of the

lesser Black-backed and the Herring Gulls. Two distinct species scarcely ever breed close by the side of each other."

The egg is laid on a ledge or hollow of the bare rock: it is pear-shaped, about three inches and a quarter long, of a blueish green, or yellowish green colour, with streaks and blotches of brown or black: sometimes the eggs are plain white or green. Great numbers of these eggs are collected by men who descend from the cliff above by means of ropes. The eggs are hatched in about a month. The young are fed for a short time on the rocks by their parents, after which they accompany them to the sea. In what manner they descend seems to be a problem. Mr. Waterton was assured by the men about Flamborough Head that when the young Guillemot gets to a certain size, it manages to climb on the back of the old bird, which conveys it down to ocean; and Mr. Yarrell, in support of this statement, assures us that he has seen at the base of very high cliffs in the Isle of Wight the young of Razor-bills and Guillemots "so small that they could not have made the descent by themselves from the lofty site of their birthplace without destruction; yet these little birds knew perfectly well how to take care of themselves, and at the approach of a boat would swim away and dive like so many Dabchicks." About August, old and young leave the rocks and take to open water. Audubon gives the following curious description of these birds on a group of rocks, which consist of several low islands, destitute of vegetation, and at no great height from the water. "Here thousands of Guillemots annually assemble at the beginning of May to deposit each its single egg and raise its young. As you approach these islands, the air becomes darkened with the multitudes of these birds that fly about. Every square foot of the ground seems to be occupied by a Guillemot planted erect, as it were, on the granite rock, but carefully warming its cherished egg. All look towards the south, and if you are fronting them, the snowy white of their bodies produces a remarkable effect, for the birds at some distance look as if destitute of head, so much does that part assimilate with the dark hue of the rocks on which they stand. On the other hand, if you approach them in the rear, the isle appears as if covered with a black pall."

THE LITTLE AUK, OR GUILLEMOT.

The LITTLE AUK, or GUILLEMOT (*Arctica* or *Mergulus Alle*), is recognisable by its short thick beak, which is vaulted above, much turned in at its cutting edge, and incised near its sharp point; in old birds the bill is furrowed in front of the oval-shaped nostril apertures. The upper part of the body is deep black, paler upon the fore neck; the under surface is white, striped with brown upon the sides; the foot is blueish. In winter the throat is whitish and the neck dark grey. The length of this species is from nine to ten inches, breadth sixteen to eighteen inches, length of wing five and a half to six inches, and that of tail one inch and one-eighth to one and three-eighths. The Little Auk is in Greenland generally known to the whale-fishers as the "Ice Bird," from an idea that its presence in any considerable numbers betokens the vicinity of ice. It is usually found within the Arctic Circle. Captain Parry found it even as far north as 82° north latitude; and they were numerous between 81° and 82°. Around Spitzbergen, and Nova Zembla, and near Greenland, it is common; further south it is much scarcer; in Great Britain it is only a winter visitor, and is most frequently seen in the Orkney and Shetland Isles; specimens have, however, been seen upon the English coast, even as far south as Kent. These birds only visit the shores for the purpose of incubation, except when driven inland by violent storms; the ocean is their home, and there they may be seen riding joyfully upon the surge or sleeping tranquilly with their beak buried among their feathers even amid the raging of the billows.

"In the course of my voyages across the Atlantic," observes Audubon, "I have often observed the Little Guillemots in small groups, rising and flying to short distances at the approach of the ship,

or diving close to the bow and reappearing a little way behind. Now with expanded wings they would flutter and run as it were on the face of the deep ; again they would seem to be busily engaged in procuring food, which apparently consisted of shrimps, other crustacea, and particles of seaweeds."

The Little Auk must certainly be regarded as the gayest and briskest member of its family ; when visiting the shore it steps nimbly along on its toes, vanishes from observation among the stones, or creeps like a mouse into crevices in the rocks. When out at sea it swims and dives with wonderful alacrity, remaining under water for even more than a couple of minutes. Its flight resembles that of the birds above described, but it moves its little wings even more rapidly than they. During the breeding season the Little Auks congregate in immense numbers in the vicinity of the islands on which the eggs are to be deposited. Each pair seeks a suitable spot among the stones that have fallen upon the beach, and there lays a single egg of about the same size as that of the Pigeon, and of a whitish colour slightly tinged with blue. How long incubation continues is unknown ; it has, however, been ascertained that both parents attend to their solitary young one (which makes its appearance clad in greyish down) supplying it with food until it is fledged and capable of flying out to sea.

The STARIKIS (*Phaleres*), a race of birds occupying northern regions, appear to some extent to claim relationship with the Auks and Divers, but are at once distinguishable from them by the flowing crest which adorns their head. Their beak is short, and very much depressed, broad, and of a somewhat triangular shape, it is incised towards the tip, and slightly vaulted above. The short slender feet are placed very far backwards ; the wings are of moderate length, and tail very short. The thick plumage is rather brightly coloured. Most of the species belonging to this group are met with between the north coast of Asia, and the north-west shores of America. These birds live in small flocks, swimming with ease and celerity while in quest of their food, which consists of crustacea, mollusca, and other marine animals. As the night approaches they seek the shore, where, under the ledges of the rocks, or in burrows dug with their bills and feet, they retire to rest. The single egg is deposited in similar situations.

THE STARIKI.

The STARIKI (*Phaleris cristatella*) presents as its most conspicuous feature a sort of plume upon the head, consisting of six or eight remarkable feathers, placed close together ; other feathers of similar character, and of a pale white, ornament the sides of the head, and project over the origin of the bill. The plumage of the adult bird is blackish brown upon the upper part of the body, and blueish grey beneath, shading upon the belly to a yellowish grey. The wing-quills and tail are black, the outermost quill being spotted with brown, and the rest with white. The eye is dark brown, beak coral-red, and foot blueish. In young birds the tuft upon the head is wanting ; the feathers on the brow are black, with white shafts ; the entire upper portion of the body is black, except the region of the shoulder, which is grey ; the throat is greyish yellow, and under surface pure white. In its general appearance this bird resembles a large Quail. Steller, who first discovered the Stariki, met with it in Behring's Straits ; subsequent naturalists have traced it from thence to the Sea of Japan and the north coasts of America. In disposition these birds are social and lively. Kittlitz tells us he has seen small parties of them swimming and diving together in twos and threes.

We learn from the same authority that each pair lays two eggs, which are moderately large, and of an elongated form. The shell is brownish white, speckled and marked with brown.

The AUKS (*Alcæ*) may in certain senses be considered as intermediate between the Guillemots and the Coulternebs, resembling the former in the coloration of their plumage and mode of life, and

the latter in the peculiar structure of their bill. The beak is of moderate length, very narrow, and very high; the upper mandible bends like a bow along the culmen, while the lower one turns angularly upwards, and is furrowed towards its base; the cutting edge, which is also curved, is exceedingly sharp. The tail is short, and consists of twelve narrow feathers; the wings are slender, long, pointed,



AN ASSEMBLAGE OF AUKS.

and sometimes sabre-shaped. In their habits and modes of life these strange-looking birds closely resemble the Guillemots.

THE RAZOR-BILL.

The RAZOR-BILL (*Alca torda*) is from sixteen to seventeen inches long, by twenty-six and a half to twenty-seven in breadth; the length of wing is eight inches, and that of tail three and a half.

When in nuptial costume, this species is black upon the upper part of body and fore neck ; a narrow band passing from the base of the beak to the eye, a line formed by the tips of the secondary quills, and the breast and belly are all pure white. In winter the neck and sides of head are white. In young birds the colours are indistinct. The eye is dark brown, beak black, with a transverse line of white, and foot black. The Razor-bill is emphatically a sea-bird, passing the greater part of its time upon the ocean, and living from year's end to year's end almost in the same locality. In winter these



GREAT AUK, OR THE GIANT PENGUIN (*Alca pinguinus* or *impennis*).

birds may be seen in great numbers in all the Norwegian fiords, from which they are absent during the summer. They appear likewise with some regularity upon the north shores of Germany, Holland, France, and Great Britain, wending their way back at the coming of spring, to breed in more northern latitudes. In the month of May they resort to the same breeding-places as the groups above described, and that in even still greater numbers. Boje observed a flight of Razor-bills measuring at least a thousand yards across, and which was so long in passing over his head that he had time to load and fire his gun ten times into the thick of the passing multitudes. We ourselves have seen equally numerous flights. Upon the Nyken during the breeding season they may be counted by hundreds of thousands, sitting in pairs and little societies upon every available projection of the rock, bending and

twisting their heads in all directions, with most ludicrous pertinacity. In these northern regions they are so fearless of man that they will allow themselves to be approached within a few hundred paces without exhibiting the slightest mistrust. When, however, we tried to seize one of them, they threw themselves headlong into the sea, from whence, after having swum about and dived a little, they again ascended to their resting-place. Upon rocks much resorted to by sea-fowl we have observed that the Razor-bills always take possession of rents and crevices, in which they deposit their egg. Some are found under stones, and a few in holes. Each pair produces but a single egg, which is of large size, much elongated, and very variable both in colour and markings, insomuch that no two can be found exactly alike. The young when hatched are clad in a thick coat of brownish black down, with white faces. Before they are half grown they become impatient of longer confinement, and apparently excited by the noise around them, throw themselves into the sea beneath, or roll themselves over and over upon the rocks until they reach it. The parents immediately follow them, and instruct them how to obtain food. This first leap of the young is a very hazardous proceeding, and thousands, instead of falling into the water, are dashed to pieces on the stones, insomuch that at this season the foot of the rock is literally covered with their mangled remains.

THE GREAT AUK.

The GREAT AUK (*Alca pinguinus* or *impennis*). This extraordinary bird occupied the northern regions of the Atlantic at the commencement of this century, but is now apparently extinct, owing to the determined pursuit to which it has been subjected. So abundant was it even a few years ago, that it was used in Greenland and Iceland as an article of food—at present its stuffed skin could not be bought for its weight in gold. This species is described by Fleming as a British bird, and he assures us that it not unfrequently bred in the Island of St. Kilda. The distinguishing mark of this interesting species was the rudimentary condition of its wings, for wings they must be called, presenting as they do all the parts met with in ordinary birds, but yet so small as to be quite useless as instruments of flight. The beak, as may be seen in stuffed specimens, is elongated and very high, and gently curved along its culmen; the lower jaw is deep and vaulted, but much compressed at its sides; its cutting edge from the corner of the mouth to beyond the nostrils is nearly straight, but beyond that bends downwards at an obtuse angle to the tip. The sides of the bill present several furrows towards its anterior extremity: of these, six or seven are on the upper, and nine or ten on the lower mandible. The structure of the foot resembles that of other Auks, as does the plumage. The tail is also composed of the same number of feathers. Its stature is nearly that of a Goose; its length being about thirty inches; the wings are not more than six and a half or seven and a half; the tail measures three inches or three and a half. Upon the upper surface the plumage is glossy black; on the throat blackish brown; an oval white patch is situated immediately in front of the eye. The under side and a thin streak across the tips of the secondary wing-quills are white. The winter plumage is entirely white. The beak and feet are black. The history of a bird so recently blotted out from the list of living creatures becomes a subject of considerable interest, and several writers have endeavoured to rescue from oblivion the principal facts recorded concerning its habits and mode of life. Previous to these inquiries, it was generally understood that the Great Auk inhabited all parts of the Frozen Ocean; such, however, appears not to have been the case. We have no proof that it ever visited the coast of Spitzbergen, nor has it been found on the shores of North America even at very high latitudes. It is authentically stated that it used formerly to breed on the Faroe Isles and was a frequent visitor to the Hebrides. Brüllock obtained one from the latter islands in 1812, and Fleming was present at the capture of another on St. Kilda's Isle in 1822. A dead specimen was washed ashore in Normandy in 1830, and this is the furthest point south it is known to have reached.

At one time it seems to have been numerous upon the reefs and rocky islets contiguous to Newfoundland. Over these rocks a formidable surf continually breaks, and it was probably on account of their inaccessibility that these situations were selected as safe breeding-places. Some of these reefs are still known by names indicative of this circumstance, "Geirfuglasker," for example, meaning the "Great Auk's Rock." In 1830, a collector of skins, of the name of Goudmundson undertook two expeditions in search of these birds; in the first he obtained twelve or thirteen, and in the second eight specimens; the greater part of which found their way into museums. Others were procured in the same manner till 1844, when two only, probably the last of their race, were taken. We will briefly relate the particulars of their capture, as they will throw some light upon the habits of these birds. The expedition sent in search of them consisted of fourteen men, who started in a boat from Kyrkjuebogr one evening in June, and came next morning to the Island of Eldey, a steep rock rising precipitately from the sea, and forming in one place a kind of platform, to which the sea rises at high water-mark. On this platform were seen two Great Auks sitting amidst a countless host of smaller species, and these at once became the objects of attack. The frightened creatures made not the slightest attempt at resistance, but immediately began to run down the cliff, their heads outstretched and little wings displayed. Notwithstanding the shortness of their legs they ran with considerable speed, but were, however, soon overtaken—a sailor with outspread arms drove one of them into a corner and held it fast—the other was seized close to the edge of the rock.

In 1858, Messrs. J. Wolley and Alfred Newton went to Iceland, but were unable to land on the Auk Skua, or even to see a bird. They obtained bones from the inhabitants.

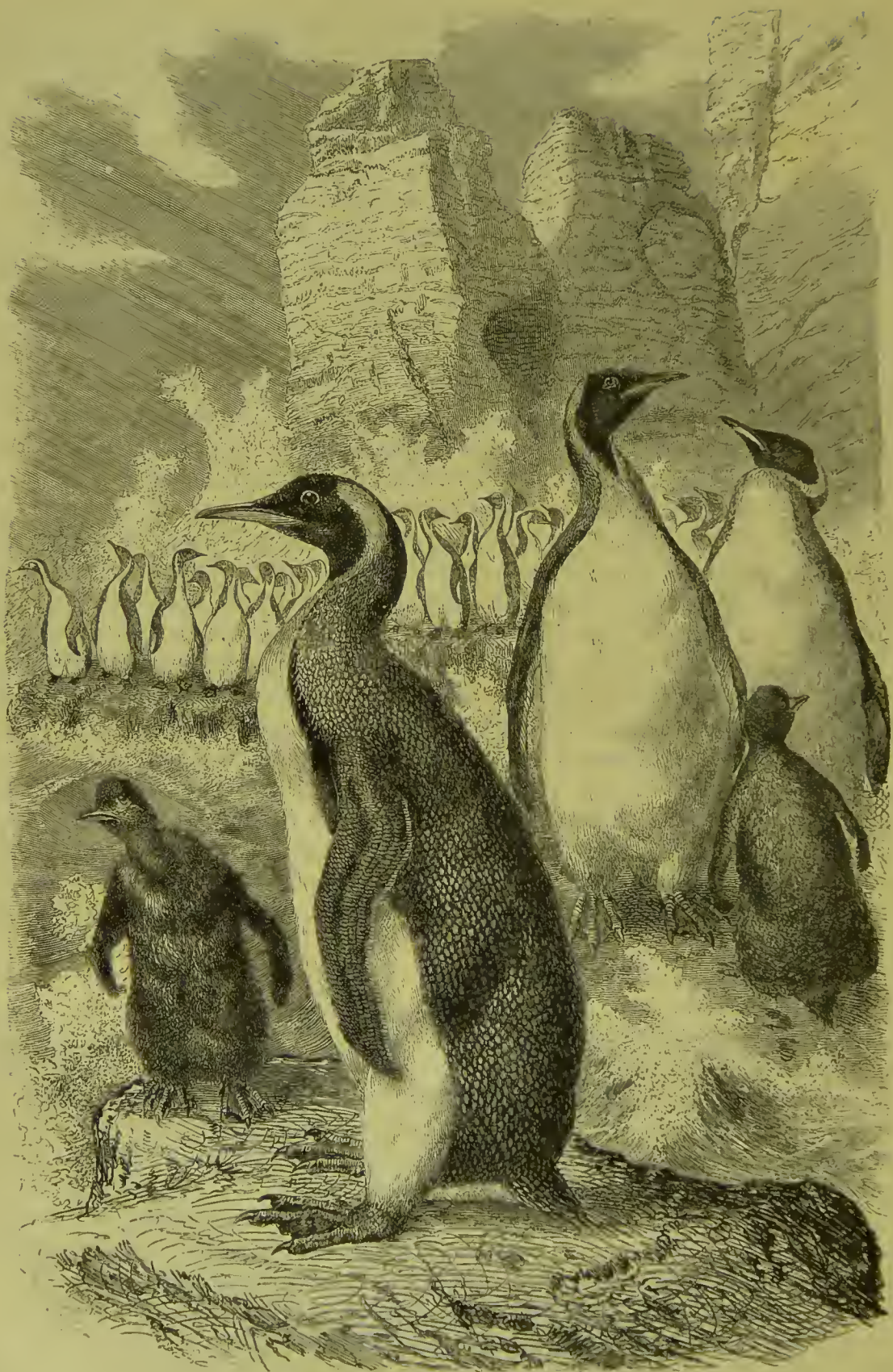
Sir L. M'Clintock, of the *Fox*, says: "The Great Auk has not been met with on any of the modern Arctic expeditions. I was told in South Greenland twenty-five years ago, that a young specimen was obtained, but am not sure of the fact. The resident Europeans are quite aware of the value attached by naturalists to this bird, so have kept a sharp look-out for it."

Mr. Proctor, of Durham Museum, writes: "One bird was bought in 1834 by the Rev. J. Gisborne, for £8. I was in Iceland in 1833, and made every inquiry for it, but never saw a single bird. I went to the northern parts of Iceland in 1837 in search of it again, and travelled through the northern parts as far as Gremsey Iceland—a small island forty miles north of the mainland—but could not meet with it. I have never seen the bird alive, neither have I had the eggs. A fisherman in Iceland had two birds and two eggs in 1846. The birds were sent to Copenhagen; the eggs were broken."

"The Great Auk inhabits the Arctic seas, but is so diminishing in numbers as now to be rarely seen. It extends from the Arctic Regions to the Orkneys, in which islands, however, only three of four specimens (a bird of this species, according to Mr. Bullock, was killed in Bucks) have been seen in the memory of the oldest inhabitant. Two individuals are recorded as having been taken at St. Kilda in 1822 and 1829; one in Buckinghamshire; another found dead at Lundy Island, 1829; another taken alive in 1834, off the coast of Waterford."

Attempts have been made to impose on collectors by the manufacture of spurious Auks' eggs. They are considered as copies of the true egg, very cleverly done.

"The natives of the Orkneys," says Montagu, "informed Mr. Bullock, on his tour through those islands several years ago, that only one male had made its appearance for a long time, which had regularly visited Papa Westra for several seasons. The female, which the natives call the Queen of the Auks, was killed just before Mr. Bullock's arrival. The king, or male, Mr. Bullock had the pleasure of chasing for several hours in a six-oared boat, but without being able to kill him, though he frequently got near him, so expert was the bird in its natural element, that it appeared impossible to shoot him. The rapidity with which he pursued his course under water was quite incredible." This



GIANT PENGUINS.

bird was sent to Mr. Bullock about a fortnight after his departure, and at the sale of his collection became the property of the British Museum, which possesses in all two birds and two eggs.

Mr. Champley, who has lately made a tour through Europe and collected evidence of every bird and egg known to exist, computes the whole at thirty-four birds and forty-two eggs, of which England has fourteen birds and twenty-four eggs. Audubon tells us that "Mr. Henry Havell, the brother of his engraver, when on his passage from New York to England hooked a Great Auk on the banks of Newfoundland in extremely boisterous weather. On being hauled on board it was left at liberty on



THE COULTERNEB, OR ARCTIC PUFFIN.

deck. It walked very awkwardly, often tumbling over, bit every one within reach of its powerful bill, and refused food of all kinds. After continuing some days on board, it was restored to its proper element."

In a letter from Hakluyt, written so far back as 1578, we learn the reason of the rapid extinction of these strange birds; this writer states that in a locality known as "Penguin Island" they were so numerous and so tame that flocks of them were driven over a plank into a boat until the boat was full. "The French," he adds, "are in the habit of salting the flesh of these birds." We learn from various sources that these birds swam well, with head erect, and neck thrown back; if alarmed, they immediately dived. When upon land they sat bolt upright, and running held themselves erect, walking with short steps; if alarmed, they at once throw themselves into the sea. The

voice is described as a feeble croak. These birds were never known to defend their eggs, but when laid hold of would bite severely. Their adroitness in the water was such that Mr. Bullock, as related by Montagu, followed one of them about for hours in a six-oared boat without being able to get near it. The food of the Great Auk consisted entirely of fishes. The single egg laid by the female was deposited in June; in size, this egg exceeded that of any other European species, being upwards of five inches long; the shell was thick, lustreless, coarse, and of a dirty white, variously marked with brown and black. The male and female, we are told, sat alternately upon their eggs: the young were at first covered with dark grey down, and soon found their way into the water.

THE COULTERNEB, OR ARCTIC PUFFIN.

The COULTERNEB, OR ARCTIC PUFFIN (*Mormon fratercula*), one of the most remarkable birds we have yet described, although an inhabitant of northern regions, is a regular summer visitant to our own, where it is known by a great variety of names all indicative of the strangeness of its appearance, such as the "Pope," "Mullet," "Sea Parrot," "Jammie," and the "Norrie." The Coulterneb is at once recognisable from all its brethren by the peculiar structure of its beak, the shortness of its neck, and the shape of its head. Its bill, when seen in profile, has a somewhat triangular shape, being high at the base, and remarkably compressed at its sides; at its origin it is covered with a thick fold of skin which is prolonged around the corner of the mouth; its anterior is deeply furrowed, rather obtuse at its tip, and very sharply edged. In this last respect the beak cannot be compared with that of any other bird. The feet are three-toed, strongly webbed, and provided with sharp claws, the points of which are turned sideways; the small feeble wing is rounded at its extremity, and the short tail composed of sixteen feathers. The plumage on the upper parts of the body is short, thick, compact, and smooth, whilst underneath it is somewhat longer, and more fur-like in appearance. The top of the head, a band around the neck, and the entire mantle are black; the cheeks and throat ash-grey. The under parts of the body are white shading to grey or black at the sides. The eye is dark brown, eye-ring coral-red, beak pale red at its tip, lighter in the furrows, and blueish grey towards the base; the corner of the mouth is orange-yellow, and the foot vermilion-red. The young birds are distinguishable by the comparative shallowness of their beaks, and the inferior brilliancy of their colours. This strange bird is twelve inches long, and twenty-three to twenty-three and a half broad; the wing measures six inches and a half to six and three-quarters, and the tail two inches and three-quarters.

The Coulternebs inhabit the northern seas as far as 82° north latitude, and are met with equally upon the northern coasts of Europe, Asia, and America; a few pairs are known to breed in Heligoland; further north they become more abundant, and in the Frozen Ocean they swim in countless multitudes; indeed, millions of them may be seen in the summer-time crowding the vicinity of their breeding-places. In Great Britain they appear on the coast about April, and betake themselves to various stations for the purpose of breeding, frequenting for this purpose the cliffs or turfey ground above them, and occasionally making use of rabbit-burrows. The Isles of Man, Anglesea, and Wight, are all frequented by them; and also the Scilly Isles, which in the fourteenth century were held under the king for the annual payment of six shillings and eightpence or 300 Puffins. The Yorkshire coast, the Fern Islands, and the coasts and islands of Scotland are also frequented by them.

"On the coast of Labrador," says Audubon, "is Perroquet Island, known to all the cod-fishers, and celebrated for the number of Puffins that annually breed there. As we rowed towards it, although we found the water literally covered with thousands of these birds, the number that flew over and around the green island seemed much greater, insomuch that one might have imagined

half the Puffins in the world had assembled there. This far-famed isle is of considerable extent ; its shores are guarded by numberless blocks of rock, and within a few yards of it the water is several fathoms in depth. The ground rises in the form of an amphitheatre to the height of about seventy feet, the greatest being from north to south, and its southern extremity fronting the Strait of Belleisle. For every burrow in the island previously visited by us, there seemed to be a hundred here ; on every crag and stone stood a Puffin, at the entrance of every hole another, and yet the sea was covered and the air filled by them. * * * The burrows were all inhabited by young birds, of different ages and sizes, and clouds of Puffins flew over our heads each holding a fish by the head. * * * While flying the Puffins emitted a deep croaking noise, but they never dropped the fish, and many of them, when brought down by a shot, still held their prey fast. I beheld with concern the extraordinary affection manifested by these birds towards each other, for whenever one fell dead or wounded on the water its mate or a stranger immediately alighted by its side, swam around it, pushed it with its bill, as if to urge it either to fly or dive, and seldom would leave it until an oar was raised to knock it on the head, when, at last aware of the danger, it would plunge below in an instant. Those which fell wounded immediately ran with speed to some hole and dived into it, on which no further effort was made to secure them. Those which happened to be caught alive in the hand bit most severely, and scratched with their claws at such a rate, that we were glad to let them escape. The burrows here communicated in various ways with each other, so that the whole island was perforated as if by a multitude of subterranean labyrinths, over which one could not run without danger of falling at almost every step. The voices of the young sounded beneath our feet like voices from the grave, and the stench was extremely disagreeable, so that as soon as our boats were filled with birds we were glad to get away. During the whole of our visit the birds never left the place, but constantly attended to their avocations. Here one would rise from beneath, there within a few yards of us another would alight with a fish and dive into its burrow, or feed the young that stood waiting at the entrance. The young birds were far from being friendly with each other, and those we carried with us kept continually fighting so long as we kept them alive. They used their yet extremely small and slender bills with great courage and pertinacity, and their cries resembled the wailings of young whelps. The smaller individuals were fed by the parents by regurgitation, or received little pieces of fish which were placed in their mouths ; the larger picked up the fish that were dropped before them, but almost all of them seemed to crawl to the entrance of the hole for the purpose of being fed. In all the burrows that communicated with others, a round place was scooped out on one side of the avenue, in the form of an oven, whilst in those that were single this oven-like place was found at the end, and was larger than the corridor. All the passages were flattish above and rounded beneath as well as on the sides. In many instances we found two birds sitting each on its egg in the same hole."

Their brood consists of but a single egg, about the size of that of a Duck ; of this the shell is coarse and uneven, and the colour pure white, at least until they become soiled and dirty. Both sexes sit upon the eggs by turns, but how long the process of incubation lasts we are unable to state ; some observers say five weeks. The dress of the newly-hatched young is composed of a thick down, of a light grey colour, spotted with coal-black. During the first day or two of its life, its cry is piping and very sad ; but the note soon gets stronger, yet it is not till they are fledged that they learn to utter the shrill peculiar cry of the old birds. The young grow slowly, and after the lapse of a month are able to leave their holes, and, under the guidance of their parents, plunge into the sea.

Both parents evince the greatest affection for their young one ; they go miles away in order to procure it food, and will face any danger in its defence. Sometimes, if the female is lost, the male will take upon himself the entire charge of his nestling, defending it with really serious bites of his formidable beak, and indefatigably providing for it the means of subsistence. Should their first egg

be taken away, the mother lays a second, and, if deprived of that, a third, generally in the same hole. If both parents are destroyed, other birds will supply their places, and voluntarily devote themselves both to the incubation of the egg and the rearing of the young. The owners of the localities where these birds build make them a source of considerable profit; they always rob the birds of their first egg, but generally leave the second to be hatched and reared; as soon as it is nearly fledged, however, it likewise is taken possession of, and thousands upon thousands are thus killed and salted for winter food.

In the Fern Islands, there being no rabbit-holes, these Puffins are obliged to dig their own burrows. According to Mr. Selby, this operation is commenced in May, a hole being generally excavated to a depth of three feet, often in a curving direction, and occasionally with two entrances. So intent are the birds upon their work of digging, which is generally performed by the males, that they will sometimes allow themselves to be captured by the hand; the same authority states that a similar indifference to what is passing around them is noticeable during the business of incubation. In St. Kilda, where their return is hailed with joy as affording an abundant supply of food, they are taken both by hand and by means of a horsehair noose, attached to the end of a rod. The Coulternebs can scarcely be called birds of passage, although during the winter season many of them journey far south; strictly speaking, they only migrate from their breeding-places to the open sea, and hence back again to the cliffs and islands, where they rear their young. Their life, indeed, may be considered as consisting of two epochs, viz., their summer residence upon the rocks, and their winter life upon the ocean; of this latter part of their existence we have still much to learn. Our first acquaintance with the Coulternebs began in the vicinity of Loffoden, and the first circumstance which arrested our attention was the manner of their flight over the sea, keeping so close to the waves that they had rather the appearance of skating over the surface than of flying through the air. The bird, in fact, in these peregrinations avails itself both of its feet and wings, sliding as it were quickly from wave to wave, half flying and half swimming, striking the air with its wings and the water with its feet, and advancing by a sort of undulating course that exactly follows the contour of the rising and sinking waves. During this remarkable kind of progression the beak seems to be employed in cleaving the water, reminding the spectator of the Scissor-bill (*Rhynchops*). When it rises from the waves, however, it flies straight on with untiring wings, and moves so rapidly that the sportsman who first tries his hand at shooting them generally fails to hit the mark. In its mode of swimming, the Coulterneb differs altogether from any other bird of its race; it rides lighter upon the wave, or sinks at will to any required depth, dives without the slightest apparent exertion, and without even disturbing the water around it. It will remain submerged for upwards of three minutes, and, if we believe the statements of some observers, will plunge to a depth of thirty fathoms. Upon dry land it walks well, but with a hopping vacillating step; rises at once from its seat into the air, and alights from its flight without difficulty. When at rest it usually sits upright upon the soles of its feet and tail, or else it lies flat on its belly upon the surface of the rock. When sitting erect, its head and neck are in constant motion, as though it were perpetually looking for something that it had lost, giving it a most comical appearance. Its voice is a sort of deep scream at times it resembles the sound made by a man when yawning, or by a discontented dog. The food of the Coulternebs consists of crustaceans and small fishes; but it is principally with the latter that they feed their young. What may be the special use of the curiously-constructed beak it is not easy to say; all that we know upon the subject is that they are able to use it with great adroitness, both while procuring their usual food, and when lopping the green herbage, which in summer scantily clothes the rocky fastnesses where they rear their young. As a weapon of defence, both from the sharpness of its edges and the strength of its muscles, it is really formidable.

The PENGUINS (*Aptenodytes*) have their wings completely converted into fins, and only available as instruments of natation. In their appearance they present but a distant relationship with the Auks and Divers, and form a distinct family, recognisable by well-marked characters. The general shape of their bodies may almost be called conical, as it seems gradually to taper off from the tail upwards, the middle of the trunk presenting scarcely any perceptible enlargement. Their neck is of moderate length, but extremely thick, the head small, and the beak, which is nearly of the same length as the head, straight, strong, hard, and somewhat compressed at the sides; frequently it is marked externally with transverse furrows. Its cutting edges are sharp, but it is somewhat blunted at its apex. The structure of the foot is quite peculiar, seeing that the four toes with which it is provided, three of which are joined together by a broad web, are all directed forwards. The wings are so short that they might almost be called fins, moreover the feathers that cover them rather resemble scales than ordinary quills. Even the plumage reminds us of the closely-imbricated scales of fishes; in short, from their whole formation they are evidently inhabitants of the water rather than of the air. Their internal structure corresponds with their external appearance; all their bones are hard, thick, and heavy, they present no openings or cavities for the reception of air, and even the humerus and femur are filled with oily matter.

Birds belonging to this remarkable family are inhabitants of the southern hemisphere, and there occupy a zone extending from 30° to 75° south latitude, living entirely upon the surface of the ocean, and only visiting the land during the period of incubation. All the various species of Penguins are utterly incapable of flight, but their powers of progression in their proper element are truly astonishing. They bound through the sea like porpoises, using their short fin-like wings to assist their progress; by the aid of these they stem the most turbulent waves with the greatest facility, and during the severest gale descend to the bottom, where they paddle about in search of crustaceans, small fish, and marine vegetables. Owing to the thickness and weight of their plumage they swim very deep in the water, so that very little is to be seen except their head and neck. Upon dry land they also exhibit considerable agility. The position of their legs compels them to keep their bodies perfectly erect, and they thus walk, putting one foot before another almost like human beings; their gait, however, is waddling, and they get along but slowly; when alarmed, therefore, they throw themselves down upon their breasts and push themselves along both with feet and wings, and that so rapidly, that a man has some difficulty in overtaking them. In this manner they throw themselves from the rocks or roll down some deep declivity into the sea, apparently knowing full well that as soon as they reach the water they are safe from pursuit. Sometimes large parties may be seen from a ship, going in a given direction as though on a journey, cutting through the waves with a celerity far surpassing that of the swiftest vessel. During a considerable portion of the year these birds are employed in providing for their young, as it is necessary that their progeny should acquire sufficient vigour to resist the raging element on which they are destined to dwell, and which they most probably will never leave, except when in their turn they seek land for the purpose of reproduction.

Of the enormous numbers in which the Penguins are seen upon their breeding-places in Arctic Regions, Sir J. C. Ross writes thus:—"In Possession Island, situated in latitude $71^{\circ} 56'$ north, and longitude $71^{\circ} 7'$ east, and composed entirely of igneous rocks, we saw not the smallest appearance of vegetation, but inconceivable myriads of Penguins completely and densely covered the whole surface of the island, along the ledges of the precipices, and even to the summits of the hills, attacking us vigorously as we waded through their ranks, and pecking at us with their sharp beaks, disputing possession; this, together with their loud coarse notes, and the insupportable stench from the deep bed of guano which had been forming for ages, and which may at some period be valuable to the agriculturists of our Australian colonies, made us glad to get away again, after having loaded

our boats with geological specimens and Penguins." Bennett gives similar testimony as to the hosts of these birds occupying the north end of Macquarie Island in the South Pacific Ocean, where we are told they occupy a space of about thirty or forty acres. "The number of Penguins collected together in this spot is immense, but it would be impossible to guess at it with any near approach to truth, as during the whole day and night 30,000 or 40,000 of them are continually landing, and an equal number going to sea. They are arranged when on shore in as compact a manner and in as regular ranks as a regiment of soldiers, and are classed with the greatest order, the young birds being in one situation, the moulting birds in another, the sitting hens in a third, the clean birds in a fourth, &c., and so strictly do birds in a similar condition congregate, that should a bird that is moulting intrude itself upon those that are clean, it is immediately ejected from among them." The females hatch the eggs by keeping them close between their thighs, and if approached during the time of incubation, move away, carrying the eggs with them. At this time the male bird goes to sea and collects food for the female, which becomes very fat. After the egg is hatched, both parents go to sea and bring home food for it; it soon becomes so fat as to be scarcely able to walk, the old birds getting very thin. The young, until nearly full grown, are covered with a coat of long down.

THE KING PENGUIN.

The KING PENGUIN (*Aptenodytes Patagonica*, and *A. Pennantii*) is the representative of a group conspicuous for their size, and distinguishable by the following characters:—Their beak is longer than the head, thin, straight, but bent downwards at its apex. The upper mandible is furrowed along its whole length, while the lower one is covered with a smooth bare skin. The legs, which are short, thick, and placed quite at the hinder part of the body, are covered with feathers almost to the toes, three of which are united by a broad web. The short compact plumage is black upon the head and throat, and bright dark greyish blue on the back and hinder part of the neck; the belly is white, and breast yellow. A bright lemon-yellow stripe commences behind the eyes, and passes along the side of the neck under the chin, where it unites; the scale-like wings are dark grey; the beak is black at its base, but towards its apex and on the lower mandible yellow; the scaly foot is dark brown. This species is above three feet long, and weighs above thirty pounds. The King Penguin inhabits the seas in the vicinity of Tierra del Fuego, the Falkland Islands, and New Georgia, and during the breeding season is very common on the coasts of Patagonia, but it is probable that all the species migrate to considerable distances.

On the coasts of Patagonia, according to Gray, two very similar species have been confounded under the name of *A. Patagonica*, the "Emperor" and the "King," he has therefore called the Emperor Penguin *A. Faceteri* and the King *A. Pennantii*. The following graphic account of the manners of *A. Faceteri* observed by Weddell in the Island of South Georgia is given by him in his "Voyage to the South Pole." "In pride these birds are not surpassed even by the Peacock, to which, in beauty of plumage, they are indeed very little inferior. During the time of moulting, they seem to repel each other with disgust, on account of the ragged state of their coats, but as they arrive at the maximum of splendour they re-assemble, and no one who has not completed his plumage is allowed to enter the community. Their habit of frequently looking down their front and sides, in order to contemplate the perfection of their superior brilliancy, and to remove any speck that might sully it, is truly amusing to an observer. During the time of hatching, the male is remarkably assiduous, so that when the hen has occasion to go off to feed or wash, the egg is transported to him, which is done by placing their toes together, and rolling it from one to the other, using their beaks to place it properly. The hen keeps charge of her young nearly a year, and in teaching them to swim has frequently to use some artifice, for when the young one refuses to take to the water, she entices it to the side of a rock and

pushes it in, and this is repeated until it takes to the sea of its own accord." Captain Fitzroy tells us that in the breeding-places of the King Penguins he has been much amused to see the old bird get on a little eminence and make a great noise between quacking and braying, holding its head up in the air as if it were haranguing the penguinnery, while the young one stands close to it, but a little lower, the old bird having continued its chatter for about a minute, puts its head down, and opens its mouth widely, into which the young one thrusts its head, and then appears to suck from the throat of



THE GOLDEN OR CRESTED PENGUIN (*Chrysocome catarractes*). ONE-FOURTH NATURAL SIZE.

the mother for a minute or two, after which the chatter is again repeated, and the young one again fed. This performance continues for about ten minutes.

The TRUE PENGUINS (*Spheniscus*) constitute a section of the above birds distinguishable by having the beak shorter than the head, straight, compressed, thick, hard, and irregularly furrowed; the margins are drawn in, and the base of the lower mandible feathered.

THE SPECTACLED OR CAPE PENGUIN.

The SPECTACLED OR CAPE PENGUIN (*Spheniscus demersus*, or *Aptenodytes demersus*), the best-known

member of this group, is about twenty inches long. In this species the upper parts of the body, the throat and cheeks and a horse-shoe band upon the breast and sides are blackish grey; a stripe over the eyes and the under side are white, the latter often marked with round brownish spots. The beak is black, banded with white, and foot brown. The Spectacled Penguin is met with in all seas between the Cape and South Polar Circle in countless numbers: it is also common near the Falkland Islands and Macquarie Land, and from Cape Horn northwards to Valparaiso and La Plata. The Cape Penguin swims and dives excellently, but moves awkwardly and stumbles frequently if it attempts to hurry. According to Latham, it will frequently run for some time like a quadruped, making use of its fin-like wings instead of legs till it can recover the upright posture which it usually maintains. It is said to clamber some way up the rocks to make a nest, in doing which it has been seen to assist itself with the bill. It lays two eggs of the size of those of the Duck, which are thought to be delicious, and are obtained in great numbers for the table. These birds are frequently kept tame, but do not live in confinement many months.

The LEAPING PENGUINS (*Eudypetes*) constitute a section having the beak closely compressed at the base, obliquely furrowed, and sharp pointed; the extremity of the upper mandible is slightly hooked and incised; above each eyebrow moreover the feathers are prolonged into conspicuous tufts.

THE GOLDEN OR CRESTED PENGUIN.

The GOLDEN OR CRESTED PENGUIN (*Chrysocome catarractes*) has the head, neck, and sides black and over each eye a stripe of pale yellow feathers, which are lengthened into a crest behind, wings black on the outside, their hinder edge and under surface white, breast and under surface silvery white, bill reddish brown, feet greyish white. The female is said to have the yellow feathers over the eyes shorter, or not prolonged into a crest.

The Golden Penguin is found in many parts of the Southern Ocean, on the coast of Patagonia, Tierra del Fuego, and Tristan d'Acunha; it is also occasionally seen on the shores of Tasmania and the coast of Australia, but is most numerous in the Islands of St. Paul's and Amsterdam; in the latter, where it is met with in great abundance, it may be seen sitting erect, or basking on the rocks in company with the seals.



CLASSIFICATION OF BIRDS,

ACCORDING TO DR. BREHM.

ORDER I.

CRACKERS (ENUCLEATOIRES).

SUB-ORDER I.

THE PARROTS (PSITTACINI).

FAMILY I.—THE TRUE PARROTS (PSITTACINÆ), i., 34.

- Sub-Family* 1.—The Grey Parrots (*Psittacus*), i., 34 ; Jako (*P. erithacus*), i., 35.
 " " 2.—The Green Parrots (*Chrysotis*), i., 39 ; Amazon Parrot (*C. Amazonica*), i., 39.
 " " 3.—The Blunt-tailed Parrots (*Pionus*), i., 40 ; the Maitakka (*P. menstruus*), i., 41.
 " " 4.—The Crested Hawk Parrots (*Deroptyus*), i., 42 ; the Crested Hawk Parrot (*D. accipitrinus*), i., 42.
 " " 5.—The Dwarf Parrots (*Agapornis*), i., 43 ; Swinder's Love Bird (*A. Swinderiana*), i., 43.
 " " 6.—The Sparrow Parrots (*Psittacula*), i., 44 ; the Sparrow Parrot (*P. passerina*), i., 44.
 " " 7.—The Siskin Parrots (*Nasiterna*), i., 45 ; the Siskin Parrot (*N. pygmæa*), i., 45.

FAMILY II.—THE COCKATOOS (PLYCTOLOPHI), i., 45.

- Sub-Family* 1.—The Cockatoos Proper (*Cacatua*), i., 42 ; the Lemon-crested Cockatoo (*C. galerita*), i., 47.
 " " 2.—The Helmet Cockatoos (*Callicephalus*), i., 47 ; the Helmet Cockatoo (*C. galeatus*), i., 47.
 " " 3.—The Nose Cockatoos (*Licmetis*), i., 48 ; the Nose Cockatoo (*L. nasicus*), i., 48.
 " " 4.—The Nestor Cockatoos (*Nestor*), i., 50 ; the Nestor Cockatoo (*N. productus*), i., 50.
 " " 5.—The Eagle Cockatoos (*Dasyptilus*), i., 51 ; the Eagle Cockatoo (*D. Pequetii*), i., 51.
 " " 6.—The Long-billed Cockatoos (*Microglossus*), i., 51 ; the Casmalos (*M. aterrimus*), i., 52.
 " " 7.—The Raven Cockatoos (*Calyptorhynchus*), i., 54 ; the Raven Cockatoo (*C. Banksii*), i., 54.

FAMILY III.—THE NIGHT PARROTS (STRIGOPES), i., 55.

- Sub-Family* 1.—The Night Parrots (*Strigops*), i., 55 ; the Kakapo (*S. habroptilus*), i., 55.

FAMILY IV.—THE ARARAS (ARÆ), i., 58.

- Sub-Family* 1.—The Araras (*Ara*), i., 58 ; the Scarlet Macaw (*A. Macao*), i., 58 ; the Soldier Arara (*A. militaris*), i., 60 ; the Anakan (*A. severa*), i., 60 ; the Ararauna (*A. Sittace Ararauna*), i., 62.
 " " 2.—The Blue Macaws (*Anodorhynchus*), i., 62 ; the Hyacinth-coloured Arara (*A. hyacinthinus*), i., 62.
 " " 3.—The Wedge-tailed Parrots (*Conurus*), i., 63 ; the Garuba (*C. luteus*), i., 64 ; the Tiriba (*C. leucotis*), i., 63 ; the Carolina Parrakeet (*C. Carolinensis*), i., 64.
 " " 4.—The Long-nosed Parrakeets (*Enicognathis*), i., 66 ; the Choroy (*E. leptorhynchus*), i., 66.

FAMILY V.—THE PARRAKEETS (PALÆORNITHES), i., 66.

- Sub-Family 1.*—The Noble Parrakeets (Palæornis), i., 67 ; the Collared or Rose-ringed Parrot (*P. torquata*), i., 67 ; the Bettet (*P. pondiceriana*), i., 68.
- ” ” 2.—The Superb Parrots (Polytelis), i., 69 ; the Scarlet-crested Supcrb Parrot (*P. Barrabandi*), i., 69.
- ” ” 3.—The Grass Parrots (Platyccrcus), i., 70 ; the Rosella (*P. eximius*), i., 70.
- ” ” 4.—The Variegated Parrots (Psephotus), i., 71 ; the Variegated Parrot (*P. multicolor*), i., 71.
- ” ” 5.—The Ornamented Parrots (Mclopsittacus), i., 72 ; the Waved Parrot (*M. undulatus*), i., 72.
- ” ” 6.—The Gay Parrots (Nymphicus), i., 77 ; the Corella (*N. Novæ-Hollandiæ*), i., 77.
- ” ” 7.—The Ground Parrakeets (Pezoporus), i., 78 ; the Ground Parrakeets (*P. formosus*), i., 78.

FAMILY VI.—THE LORIES (LORII), i., 79.

- Sub-Family 1.*—The Lories Proper (Lorius), i., 79 ; the Purple-capped Lory (*L. domicella*), i., 79.
- ” ” 2.—The Lorikeets (Psitteuteles), i., 79 ; the Dappled Lorikeet (*P. versicolor*), i., 79.
- ” ” 3.—The Purple Lories (Coryphilus), i., 81 ; the Maiden Loriket (*C. Tahitianus*), i., 81.
- ” ” 4.—The Long-tailed Lories (Pyrrhodes), i., 82 ; the Rasmalas (*P. Papuensis*), i., 82.

*SUB-ORDER II.**PASSERINE BIRDS (PASSERES).**FAMILY I.—THE CROSS-BILLS (LOXIÆ), i., 85.*

- Sub-Family 1.*—The True Cross-bills (Loxia), i., 85 ; the Large-beaked Cross-bill (*L. pityopsittacus*), i., 86 ; the Pine-tree Cross-bill (*L. curvirostra*), i., 86 ; the Banded Cross-bill (*L. tænioptera*), i., 86.
- ” ” 2.—The Parrot Greenfinches (Psittirostra), i., 91 ; the Parrot Greenfinch (*P. psittacea*), i., 91.

FAMILY II.—THE BULLFINCHES (PYRRHULÆ), i., 92.

- Sub-Family 1.*—The Parrot Bullfinches (Paradoxornis), i., 92 ; the Parrot Bullfinch (*P. flavirostris*), i., 92.
- ” ” 2.—The Pine Grosbeaks (Pinicola), i., 93 ; the Pine Grosbeak (*P. enucleator*), i., 93.
- ” ” 3.—The Carmine Grosbeaks (Erythrothorax), i., 95 ; the Rose Bullfinch (*E. roscus*), i., 95 ; the Carmine Bullfinch, (*E. erythrinus*), i., 95.
- ” ” 4.—The Long-tailed Bullfinches (Uragus), i., 97 ; the Siberian Bullfinch (*U. Sibericus*), i., 97.
- ” ” 5.—The Desert Bullfinches (Bucanetes), i., 98 ; the Vinous Grosbeak (*B. githagineus*), i., 98.
- ” ” 6.—The True Bullfinches (Pyrrhula), i., 102 ; the Bullfinch (*P. vulgaris*), i., 102.
- ” ” 7.—The Garden Bullfinches (Serinus), i., 106 ; the Girlitz (*S. hortulanus*), i., 106.
- ” ” 8.—The Tree Bullfinches (Dryospiza), i., 108 ; the Canary-bird (*D. Canaria*), i., 108.

FAMILY III.—THE FINCHES (FRINGILLÆ), i., 114.

- Sub-Family 1.*—The True Finches (Fringilla), i., 114 ; the Chaffinch (*F. cœlebs*), i., 115 ; the Mountain Finch (*F. montifringilla*), i., 118.
- ” ” 2.—The Mountain Finches (Montifringilla), i., 119 ; the Snow Finch (*M. nivalis*), i., 119.
- ” ” 3.—The Winter Finches (Nyphæa), i., 119 ; the Winter Finch (*N. hyemalis*), i., 119.
- ” ” 4.—The Linnets (Cannabinæ), i., 122 ; the Brown Linnet (*C. linota*), i., 122 ; the Mountain or Grey Linnet (*C. montium*), i., 124.
- ” ” 5.—The Birch Siskins (Linaria), i., 124 ; the Birch-tree Siskin (*L. rubra*), i., 124.
- ” ” 6.—The True Siskins (Spinus), i., 127 ; the Common Siskin (*S. viridis*), i., 127.
- ” ” 7.—The Thistle Finches (Carduelis), i., 129 ; the Goldfinch (*C. elegans*), i., 129.
- ” ” 8.—The Golden Thistle Finches (Astragalinus), i., 130 ; the Golden Thistle Finch (*A. tristis*), i., 130.

FAMILY IV.—THE SPARROWS PROPER (PASSERES), i., 131.

- Sub-Family 1.*—The True Sparrows (*Passer*), i., 131 ; the Common Sparrow (*P. domesticus*), i., 131 ; the Spanish Sparrow (*P. Hispanicus*), i., 135 ; the Field or Tree Sparrow (*P. montanus*), i., 136.
- ” ” 2.—The Plain Sparrows (*Pyrgitopsis*), i., 137 ; the Plain Sparrow (*P. simplex*), i., 137.
- ” ” 3.—The Golden Sparrows (*Chrysospiza*), i., 137 ; the Golden Sparrow (*C. lutea*), i., 137.
- ” ” 4.—The Mountain Sparrows (*Petronia*), i., 138 ; the Rock Sparrow (*P. rupestris*), i., 138.

FAMILY V.—THE HAWFINCHES (COCCOTHTRAUSTÆ), i., 139.

- Sub-Family 1.*—The Greenfinches (*Chloris*), i., 139 ; the Green Grosbeak, or Greenfinch (*C. hortensis*), i., 139.
- ” ” 2.—The True Hawfinches (*Coccothraustes*), i., 141 ; the Hawfinch (*C. vulgaris*), i., 141.
- ” ” 3.—The Evening Hawfinches (*Hesperiphona*), i., 142 ; the Evening Cherry Hawfinch (*H. vespertina*), i., 142.
- ” ” 4.—The Large-beaked Hawfinches (*Geospiza*), i., 143 ; the Large-beaked Hawfinch (*G. magnirostris*), i., 143.

FAMILY VI.—THE PARROT FINCHES (PITYLI), i., 143.

- Sub-Family 1.*—The Rose-breasted Grosbeaks (*Coccothraustes*), i., 143 ; the Rose-breasted Hawfinch (*C. ludovicianus*), i., 143.
- ” ” 2.—The Tufted Grosbeaks (*Cardinalis*), i., 145 ; the Cardinal Grosbeak (*C. virginianus*), i., 145.
- ” ” 3.—The Grey Finches (*Paroaria*), i., 146 ; the Dominican Finch (*P. dominicana*), i., 146.
- ” ” 4.—The Bullfinch Finches (*Sporophila*), i., 146 ; the Tiny Finch (*S. minuta*), i., 146.
- ” ” 5.—The Diadem Grosbeaks (*Catamblyrhynchus*), i., 147 ; the Diadem Grosbeak (*C. diadematus*), i., 147.
- ” ” 6.—The True Parrot Finches (*Pitylus*), i., 147 ; the Ashy-blue Parrot Finch (*P. cœrulescens*), i., 147.
- ” ” 7.—The Masked Parrot Finches (*Caryothraustes*), i., 147 ; the Masked Parrot Finch (*C. brasiliensis*), i., 147.
- ” ” 8.—The Habias (*Saltator*), i., 148 ; the Capi (*S. cœrulescens*), i., 148.
- ” ” 9.—The Plant Cutters (*Phytotoma*), i., 149 ; the Rarita, or Rara (*P. rara*), i., 150.

FAMILY VII.—THE TANGARAS (TANAGRÆ), i., 150.

- Sub-Family 1.*—The Tangaras Proper (*Tanagra*), i., 151 ; the Ornate Tangara (*T. ornata*), i., 151.
- ” ” 2.—The Fire Tangaras (*Pyranga*), i., 151 ; the Flax Bird (*P. rubra*), i., 151 ; the Summer Red Bird (*P. æstiva*), i., 152.
- ” ” 3.—The Callistes (*Calliste*), i., 153 ; the Red-necked Calliste (*C. festiva*), i., 153.
- ” ” 4.—The Callous-beaked Tangaras (*Ramphocelus*), i., 153 ; the Tapiranga (*R. brasiliensis*), i., 154.
- ” ” 5.—The Butcher-Bird Tangaras (*Lanio*), i., 154 ; the Black-headed Butcher-Bird Tangara (*L. atricapillus*), i., 154.
- ” ” 6.—The Organist Tangaras (*Euphonia*), i., 154 ; the Violet Organist, or Guttarama (*E. violacea*), i., 155.

FAMILY VIII.—THE BRIGHT-COATED FINCHES (AMADINÆ), i., 155.

- Sub-Family 1.*—The Band-Birds, or Collared Finches (*Amadina*), i., 156 ; the Collared Finch (*A. fasciata*), i., 156.
- ” ” 2.—The Hooded Finches (*Spermestes*), i., 157 ; the Magpie Finch (*S. cucullata*), i., 158.
- ” ” 3.—The Reed Finches (*Donacula*), i., 158 ; the Chestnut Reed Finch (*D. castaneothorax*), i., 158 ; the Double-banded Reed Finch (*D. bivittata*), i., 158.
- ” ” 4.—The Grass Finches (*Poëphila*), i., 159 ; the Admirable Chaff-finch (*Chloëbia mirabilis*), i., 159.
- ” ” 5.—The Rice Finches (*Padda*), i., 160 ; the Rice Bird (*P. oryzivora*), i., 160.
- ” ” 6.—The Striped Finches (*Pytelia*), i., 161 ; the Little Gold-breast (*P. subflava*), i., 161.
- ” ” 7.—The Speckled Finches (*Lagonosticta*), i., 162 ; the Blood Finch (*L. minima*), i., 162.

- Sub-Family* 8.—The Variegated Finches (*Emblema*), i., 162 ; the Variegated Finch (*E. picta*), i., 162.
 " " 9.—The Bright Finches (*Hypochera*), i., 163 ; the Steel Finch (*H. ultramarina*), i., 163.
 " " 10.—The Butterfly Finches (*Mariposa*), i., 163 ; the Butterfly Finch (*M. phœnicotis*), i., 163.
 " " 11.—The Astrilds (*Astrilda*), i., 164 ; the Pheasant Finch (*A. undulata*), i., 164.

FAMILY IX.—THE WEAVER BIRDS (PLOCEI), i., 166.

- Sub-Family* 1.—The Social Weaver Birds (*Philetaërus*), i., 167 ; the Social Weaver Bird (*P. socius*), i., 167.
 " " 2.—The Yellow Weaver Birds (*Ploceus*), i., 168 ; the Golden Weaver Bird (*P. galbula*), i., 168.
 " " 3.—The Bayas, or Bunting Weaver Birds (*Nelicurvius*), i., 170 ; the Baya (*N. Baya*), i., 170.
 " " 4.—The Crimson-beaked Weaver Birds (*Quelea*), i., 171 ; the Crimson-beaked Weaver Bird, or Dioc (*Q. sanguinrostris*), i., 171.
 " " 5.—The Tahas (*Taha*), i., 174 ; the Taha (*T. dubia*), i., 174.
 " " 6.—The Fire-finches (*Euplectes*), i., 174 ; the Flame-coloured Fire-finch (*E. ignicolor*), i., 175.
 " " 7.—The Buffalo Weaver Birds (*Textor*), i., 176 ; the Alecto Buffalo Weaver Bird (*T. Alecto*), i., 177.

FAMILY X.—THE WHYDAH OR WIDOW BIRDS (VIDUÆ), i., 178.

- Sub-Family* 1.—The Mourning Widows (*Coliuspasser*), i., 179 ; the Yellow-shouldered Mourning Widow (*C. flaviscapulatus*), i., 179.
 " " 2.—The Long-tailed Widow Birds (*Chera*), i., 179 ; the Long-tailed Widow Bird (*C. caffra*), i., 179.
 " " 3.—The Cock-tailed Widow Birds (*Steganura*), i., 180 ; the Paradise Widow Bird (*S. paradisea*), i., 180.

FAMILY XI.—THE BUNTING FINCHES (PASSERELLÆ), i., 181.

- Sub-Family* 1.—The Morning Finches (*Zonotrichia*), i., 181 ; the White-throated Sparrow (*Z. albicollis*), i., 182 ; the Morning Finch (*Z. matutina*), i., 182.
 " " 2.—The Bunting Finches Proper (*Spizella*), i., 183 ; the Tree Bunting Finch (*S. Canadensis*), i., 183.
 " " 3.—The Prairie Bunting Finches (*Passerculus*), i., 184 ; the Prairie Bunting Finch (*P. savannus*), i., 184.
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 " " 3.—The Crooked Sabre-wings (*Platystylopterus*), iii., 55 ; the Fawn-coloured Sabre-wing (*P. rufus*), iii., 55.

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- „ „ 4.—The Francolins (*Francolinus*), iii., 212 ; the Black Partridge (*F. vulgaris*), iii., 212.
- „ „ 5.—The Bare-necked Pheasants (*Pternistes*), iii., 213 ; the Red-necked Pheasant (*P. rubricollis*), iii., 213.

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- „ „ 2.—The Tree Quails (*Ortyx*), iii., 216 ; the Virginian Partridge (*O. Virginianus*), iii., 216.
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- „ „ 2.—The Plain Wanderers (*Pedionomus*), iii., 227 ; the Collared Plain Wanderer (*P. torquatus*), iii., 227.

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- „ „ 2.—The Horned Pheasants, or Tragopans (*Cerionis*), iii., 232 ; the Sikkim Horned Pheasant (*C. Satyra*), iii., 232 ; the Jewar, or Western Horned Pheasant (*C. melanocephala*), iii., 233.

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- „ „ 3.—The Pheasants Proper (*Phasianus*), iii., 242 ; the Common Pheasant (*P. colchicus*), iii., 242 ; the Chinese Ring-necked Pheasant (*P. torquatus*), iii., 243 ; the Japanese Pheasant (*P. versicolor*), iii., 244 ; Sæmmering's Pheasant (*P. Sæmmeringii*), iii., 245 ; Reeves's Pheasant (*P. Reevesii*), iii., 246.
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- „ „ 5.—The Eared Pheasants (*Crossoptilon*), iii., 250 ; the Chinese Eared Pheasant (*C. auritum*), iii., 250.
- „ „ 6.—The Argus Pheasants (*Argus*), iii., 250 ; the Argus Pheasant (*A. giganteus*), iii., 250.
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- „ „ 2.—The Tufted Guinea Fowls (*Guttera*), iii., 257 ; Pucheran's Tufted Guinea Fowl (*G. Pucheranii*), iii., 257.
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- „ „ 2.—The Inambus (Rhynchotus), iii., 285 ; the Inambu (R. rufescens), iii., 285.
- „ „ 3.—The American Quails (Nothura), iii., 285 ; the Lesser American Quail (N. nana), iii., 285.
- „ „ 4.—The Macucas (Trachypelmus), iii., 285 ; the Macuca (T. Brasiliensis), iii., 285.

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- „ „ 3.—The Emus (Dromæus), iii., 301 ; the Emu (D. Novæ-Hollandiæ), iii., 301 ; the Spotted Emu (D. irroratus), iii., 301.

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- Sub-Family* 1.—The Cassowaries (Casuarius), iii., 302 ; the Helmeted Cassowary (C. galeatus), iii., 302 ; the Mooruk (C. Bennettii), iii., 302 ; the Australian Cassowary (C. Australis), iii., 307.

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- Sub-Family* 1.—The Kivis (Apteryx), iii., 309 ; the Australian Apteryx, or Kivi-Kivi (A. Australis), iii., 309 ; Mantell's Apteryx (A. Mantellii), iii., 310 ; Owen's Apteryx (A. Owenii), iii., 311.

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- Sub-Family* 1.—The True Bustards (Otis), iv., 2 ; the Great Bustard (O. tarda), iv., 2.
- „ „ 2.—The Little Bustards (Tetrax), iv., 5 ; the Little Bustard (T. campestris), iv., 5.
- „ „ 3.—The Houbaras (Hubara), iv., 6 ; the Indian Houbara (H. Macquennii), iv., 6 ; the African Ruffed Bustard (H. undulata), iv., 8.
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- Sub-Family 1.*—The Pratincoles (*Glareola*), iv., 12 ; the Collared Pratincole (*G. pratincola*), iv., 13.

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- Sub-Family 1.*—The Thick-knees (*Ædicnemus*), iv., 14 ; the Common Thick-knee (*O. crepitans*), iv., 14.

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 „ „ *2.*—The Dotted Plovers (*Eudromias*), iv., 18 ; the Dotterel (*E. Morinellus*), iv., 19.
 „ „ *3.*—The Shore Plovers (*Ægialites*), iv., 20 ; the Little Shore Plover (*Æ. minor*), iv., 20.

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- Sub-Family 1.*—The Peewits (*Vanellus*), iv., 21 ; the Peewit, or Lapwing (*V. cristatus*), iv., 22.
 „ „ *2.*—The Spur-winged Lapwings (*Hoplopterus*), iv., 23 ; the Spur-winged Lapwing (*H. spinosus*), iv., 23.
 „ „ *3.*—The Lapped Peewits (*Sarciophorus*), iv., 24 ; the Lapped Peewit (*S. pileatus*), iv., 24.

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- Sub-Family 1.*—The Turnstones (*Strepsilas*), iv., 24 ; the Turnstone (*S. interpres*), iv., 24.

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- Sub-Family 1.*—The Oyster-catchers (*Hæmatopus*), iv., 27 ; the Pied Oyster-catcher (*H. ostralegus*), iv., 27.

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- Sub-Family 1.*—The Woodcocks (*Scolopax*), iv., 30 ; the Woodcock (*S. rusticola*), iv., 30.
 „ „ *2.*—The Marsh Snipes (*Gallinago*), iv., 33 ; the Common Snipe (*G. Scolopacinus*), iv., 34.
 „ „ *3.*—The Moor Snipes (*Philolimnos*), iv., 35 ; the Jack Snipe (*P. gallinula*), iv., 35.

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- Sub-Family 1.*—The Curlew Sandpipers (*Limicola*), iv., 36 ; the Pigmy Curlew Sandpiper (*L. pygmæa*), iv., 36.
 „ „ *2.*—The Sanderlings (*Calidris*), iv., 36 ; the Sanderling (*C. arenaria*), iv., 36.
 „ „ *3.*—The Mud Sandpipers (*Pelidna*), iv., 38 ; the Mud Sandpiper (*P. subarquata*), iv., 38.
 „ „ *4.*—The Dwarf Sandpipers (*Actodroma*), iv., 38 ; the Dwarf Sandpiper (*A. minuta*), iv., 38.
 „ „ *5.*—The Ruffs (*Philomachus*), iv., 39 ; the Ruff (*P. pugnax*), iv., 39.

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- Sub-Family 1.*—The Hyperborean Phalaropes (*Lobipcs*), iv., 43 ; the Hyperborean Phalarope (*L. hyperboreus*), iv., 43.
 „ „ *2.*—The Phalaropes Proper (*Phalaropus*), iv., 43 ; the Red Phalarope (*P. rufus*), iv., 43.

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- Sub-Family 1.*—The True Sandpipers (*Actitis*), iv., 45 ; the Common Sandpiper (*A. hypoleucos*), iv., 45.
 „ „ *2.*—The Greenshanks (*Glottis*), iv., 46 ; the Greenshank (*G. chloropus*), iv., 46.
 „ „ *4.*—The Godwits (*Limosa*), iv., 47 ; the Red or Bar-tailed Godwit (*L. rufa*), iv., 48.
 „ „ *5.*—The Stilts (*Hypsibates*), iv., 49 ; the Black-winged Stilt (*H. himantopus*), iv., 49.

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„ 2.—The Scarlet Ibises (*Ibis*), iv., 56 ; the Scarlet Ibis (*I. rubra*), iv., 56.

„ 3.—The True Ibises (*Threskiornis*), iv., 56 ; the Egyptian or Sacred Ibis (*T. religiosa*), iv., 56.

FAMILY XVI.—THE SPOONBILLS (PLATALEÆ), iv., 58.

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Sub-Family 1.—The Whale-headed Storks (*Balæniceps*), iv., 59 ; the Whale-headed Stork, or Shoe-beak (*B. rex*), iv., 59.

„ 2.—The Boat-bills (*Cancroma*), iv., 62 ; the Savaku, or Boat-bill (*C. cochlearia*), iv., 62.

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„ 2.—The True Storks (*Ciconia*), iv., 67 ; the White or House Stork (*C. alba*), iv., 69.

„ 3.—The Simbils (*Sphenorhynchus*), iv., 70 ; the Simbil (*S. Abdimii*), iv., 70.

„ 4.—The Giant Storks (*Mycteria*), iv., 71 ; the Senegal Jabiru (*M. Senegalensis*), iv., 71 ; the Jabiru (*M. Australis*), iv., 71.

„ 5.—The Adjutants, Argalas, or Marabouts (*Leptoptilos*), iv., 74 ; the African Marabou (*L. crumenifer*), iv., 74 ; the Indian Adjutant, or Argala (*L. argala*), iv., 74.

„ 6.—The Clapper-billed Storks (*Anastomus*), iv., 75 ; the African Clapper Bill (*A. lamelligerus*), iv., 75.

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„ 2.—The White Herons (*Herodias*), iv., 81 ; the Great White Heron (*H. alba*), iv., 81 ; the Lesser Egret (*H. garzetta*), iv., 82.

„ 3.—The Cattle Herons (*Bubulcus*), iv., 82 ; the Cattle Heron (*B. ibis*), iv., 82.

„ 4.—The Night Herons (*Nycticorax*), iv., 82 ; the Night Heron (*N. Europæus*), iv., 82.

„ 5.—The Dwarf Bitterns (*Ardetta*), iv., 83 ; the Little Bittern (*A. minuta*), iv., 83.

„ 6.—The Bitterns (*Botaurus*), iv., 85 ; the Common Bittern (*B. stellaris*), iv., 85.

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„ 2.—The Demoiselle Cranes (*Anthropoides*), iv., 90 ; the Demoiselle Crane (*A. virgo*), iv., 90.

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- Sub-Family* 1.—The Snake Cranes (*Dicholophus*), iv., 91 ; the Brazilian Cariama (*D. cristatus*), iv., 91.
 „ „ 2.—The Trumpeters (*Psophia*), iv., 94 ; the Agami (*P. crepitans*), iv., 94.

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- Sub-Family* 1.—The Horned Screammers (*Palamedea*), iv., 96 ; the Aniama (*P. cornuta*), iv., 96.
 „ „ 2.—The Tschajas (*Chauna*), iv., 97 ; the Chauna, or Tschaja (*C. Chavaria*), iv., 97.

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- Sub-Family* 1.—The Snipe Rails (*Rhynchæa*), iv., 98 ; the Golden Rail (*R. Capensis*), iv., 99.
 „ „ 2.—The Water Rails (*Rallus*), iv., 99 ; the Water Rail (*R. aquaticus*), iv., 99.
 „ „ 3.—The Aramides (*Aramides*), iv., 100 ; the Serrakura (*A. gigas*), iv., 101.
 „ „ 4.—The Land Rails (*Crex*), iv., 101 ; the Land Rail, or Corn Crake (*C. pratensis*), iv., 101.

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- Sub-Family* 1.—The Jacanas Proper (*Parra*), iv., 102 ; the Chilian Jacana (*P. Jacana*), iv., 102.
 „ „ 2.—The Water Pheasants (*Hydrophasianus*), iv., 103 ; the Chinese Jacana, or Water Pheasant (*H. Sinensis*), iv., 103.

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 „ „ 2.—The Water Hens (*Stagnicola*), iv., 106 ; the Common Moor-hen (*S. chloropus*), iv., 107.
 „ „ 3.—The Coots (*Fulica*), iv., 110 ; the Common Coot (*F. atra*), iv., 111.

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- Sub-Family* 1.—The Finfoots (*Heliornis*), iv., 112 ; the Surinam Finfoot, or Picapare (*H. Surinamensis*), iv., 112.

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- Sub-Family* 1.—The Mute Swan (*Cygnus olor*), iv., 121.
 „ „ 2.—The Whistling Swan (*C. musicus*), iv., 123.
 „ „ 3.—Bewick's Swan (*C. Bewickii*), iv., 126.
 „ „ 4.—The Black-necked Swan (*C. nigricollis*), iv., 126.
 „ „ 5.—The Black Swan (*C. atratus*), iv., 127.

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- Sub-Family* 2.—The Wild Geese (*Anser*), iv., 131; the Grey or Wild Goose (*A. cinereus*), iv., 131.
 " " 3.—The Swan Geese (*Cygnopsis*), iv., 131; the Canada Goose (*C. Canadensis*), iv., 131.
 " " 4.—The Snow Geese (*Anser* or *Chen*), iv., 135; the Snow Goose (*A. or C. hyperboreus*), iv., 135.
 " " 5.—The Sea Geese (*Bernicla*), iv., 135; the Brent Goose (*B. torquata*), iv., 136.
 " " 6.—The Foxy Geese (*Chenalopex*), iv., 137; the Nile Goose (*C. Ægyptiacus*), iv., 138.
 " " 7.—The Dwarf Geese (*Nettapus*), iv., 139; the White-bodied Goose Teal (*N. Coromandelianus*), iv., 140.
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 " " 2.—The Sheldrakes (*Vulpanser*), iv., 146; the Common Sheldrake (*V. tadorna*), iv., 146.
 " " 3.—The Tree Ducks (*Dendrocygna*), iv., 148; the Widow Duck (*D. viduata*), iv., 148.
 " " 4.—The Wild Ducks (*Anas*), iv., 150; the Wild Duck (*A. boschas*), iv., 150.
 " " 5.—The Wood or Summer Ducks (*Aix*), iv., 154; the Wood or Summer Duck (*A. sponsa*), iv., 154; the Chinese Teal, or Mandarin Duck (*A. galericulata*), iv., 155.
 " " 6.—The Shoveler Ducks (*Spatula*), iv., 156; the Shoveler Duck (*S. clypeata*), iv., 156.
 " " 7.—The Musk Ducks (*Cairina*), iv., 157; the Musk Duck (*C. moschata*), iv., 157.

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 " " 2.—The Scoters (*Oidemia*), iv., 166; the Velvet Scoter (*O. fusca*), iv., 166.
 " " 3.—The Fen Ducks (*Aythya*), iv., 167; the Red-headed Duck, or Pochard (*A. ferina*), iv., 163.
 " " 4.—The Pin-tailed Ducks (*Erismatura*), iv., 169; the White-headed Pin-tailed Duck (*E. leucocephala*), iv., 169.

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- Sub-Family* 1.—The Dwarf Mergansers (*Mergellus*), iv., 170; the White-headed Merganser (*M. albellus*), iv., 170.
 " " 2.—The True Goosanders (*Mergus*), iv., 172; the Green-headed Goosander (*M. merganser*), iv., 172.

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 " " 2.—The River Terns (*Sterna*), iv., 178; the Common Tern (*S. hirundo*), iv., 179.
 " " 3.—The Dwarf Terns (*Sternula*), iv., 181; the Lesser Tern (*S. minuta*), iv., 181.
 " " 4.—The Water Swallows (*Hydrochelidon*), iv., 181; the Black Marsh Tern (*H. nigra*), iv., 182; the White-winged Tern (*H. leucoptera*), iv., 183; the White-bearded Tern (*H. leucoptera*), iv., 183.
 " " 5.—The Fairy Terns (*Gygis*), iv., 183; the White or Silky Tern (*G. candida*), iv., 183.
 " " 6.—The Noddies (*Anous*), iv., 184; the Noddy (*A. stolidus*), iv., 184.

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- Sub-Family* 1.—The Scissor Bills (*Rhynchops*), iv., 185; the Indian Scissor Bill (*R. orientalis*), iv., 185.

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- Sub-Family 1.*—The Fishing Gulls (*Larus*), iv., 187 ; the Great Black-headed Gull (*L. marinus*), iv., 188 ; the Lesser Black-backed Gull (*L. fuscus*), iv., 190.
- „ „ 2.—The Ice Gulls (*Pagophila*), iv., 193 ; the Ivory Gull (*P. eburnea*), iv., 193.
- „ „ 3.—The Kittiwakes (*Rissa*), iv., 194 ; the Kittiwake (*R. tridactyla*), iv., 194.
- „ * „ 4.—The Black-headed Gulls (*Chroicocephalus*), iv., 195 ; the Laughing Gull (*C. ridibundus*), iv., 195 ; the Great Black-headed Gull (*C. ichthyaetus*), iv., 197 ; the Lesser Black-headed Gull (*C. melanolephalus*), iv., 198 ; the Little Gull (*C. minuta*), iv., 198.
- „ „ 5.—The Rosy Gulls (*Rhodostethia*), iv., 203 ; Ross's Rosy Gull (*R. Rossii*), iv., 203.

FAMILY IV.—THE SKUAS (LESTRIS), iv., 198.

- Sub-Family 1.*—The Skuas (*Lestrin*), iv., 198 ; the Common Skua (*L. catarractes*), iv., 199 ; Buffon's or the Parasite Skua (*L. parasiticus*), iv., 202.

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- Sub-Family 1.*—The Albatrosses (*Diomedea*), iv., 203 ; the Wandering Albatross (*D. exulans*), iv., 205 ; the Yellow-billed Albatross (*D. chlororhynchus*), iv., 206 ; the Sooty Albatross (*D. fuliginosa*), iv., 207.

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- Sub-Family 1.*—The Giant Petrels (*Procellaria*), iv., 208 ; the Giant Petrel (*P. gigantea*), iv., 208 ; the Fulmar Petrel (*P. glacialis*), iv., 209 ; the Cape Petrel (*P. Capensis*), iv., 211.
- „ „ 2.—The Duck Petrels (*Prion*), iv., 213 ; the Duck Petrel (*P. vittatus*), iv., 213.

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- Sub-Family 1.*—The Storm Swallows (*Thalassidroma*), iv., 215 ; the Common Storm Petrel (*T. pelagica*), iv., 215.
- „ „ 2.—The Storm Swifts (*Oceanodroma*), iv., 217 ; Leach's Storm Petrel (*O. Leachii*), iv., 217.

FAMILY VIII.—THE PUFFINS (PUFFINI), iv., 217.

- Sub-Family 1.*—The Puffins (*Puffinus*), iv., 217 ; the Manx Puffin, or Shearwater (*P. Anglorum*), iv., 218.

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- Sub-Family 1.*—The Tropic Birds Proper (*Phaeton*), iv., 219 ; the White-tailed Tropic Bird (*P. æthereus*), iv., 220 ; the Red-tailed Tropic Bird (*P. phœnicurus*), iv., 220.
- „ „ 2.—The Gannets (*Sula*), iv., 221 ; the Common Gannet (*S. alba*), iv., 223.

FAMILY II.—THE FRIGATE BIRDS (TACHYPETES), iv., 224.

- Sub-Family 1.*—The Frigate Birds (*Tachypetes*), iv., 224 ; the Frigate Bird (*T. aquila*), iv., 224.

FAMILY III.—THE CORMORANTS (HALIET), iv., 227.

- Sub-Family 1.*—The Darters, or Snake Necks (*Plotus*), iv., 228 ; the Anhinga (*P. anhinga*), iv., 228 ; Le Vaillant's Snake Bird (*P. Levillantii*), iv., 230.
- „ „ 2.—The Cormorants Proper (*Phalacrocorax*), iv., 230 ; the Cormorant (*P. carbo*), iv., 234.

FAMILY IV.—THE PELICANS (PELECANI), iv., 235.

Sub-Family 1.—The Pelicans (*Pelecanus*), iv., 235 ; the White Pelican (*P. onocrotalus*), iv., 237 ; the Great Tufted or Dalmatian Pelican (*P. crispus*), iv., 239.

SUB-ORDER XVII.

DIVERS (URINATOIRES).

FAMILY I.—THE GREBES (PODICIPITES), iv., 240.

Sub-Family 1.—The Crested Grebes (*Podiceps*), iv., 240 ; the Crested Grebe (*P. cristatus*), iv., 242.
 " " 2.—The Dwarf Grebes (*Podiceps minor*), iv., 244 ; the Little Grebe (*P. minor*), iv., 244.

FAMILY II.—THE SEA DIVERS (COLYMBI), iv., 245.

Sub-Family 1.—The Great Northern Diver (*Colymbus glacialis*), iv., 247 ; the Black-throated Diver (*C. arcticus*), iv., 248 ; the Red-throated Diver (*C. septentrionalis*), iv., 249.

FAMILY III.—THE LOONS (URIE), iv., 250.

Sub-Family 1.—The Black Guillemots (*Cephus*), iv., 250 ; the Black Guillemot (*C. grylle*), iv., 250.
 " " 2.—The True Guillemots (*Uria*), iv., 251 ; the Common or Foolish Guillemot (*U. troile*), iv., 253.
 " " 3.—The Little Auks (*Mergulus*, or *Arctica*), iv., 254 ; the Little Auk (*M. or A. Alle*), iv., 254.

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Sub-Family 1.—The Crested Divers (*Phaleris*), iv., 255 ; the Stariki (*P. cristatella*), iv., 255.

FAMILY V.—THE AUKS (ALCÆ), iv., 255.

Sub-Family 1.—The Auks (*Alca*), iv., 256 ; the Razor-bill (*A. torda*), iv., 256.
 " " 2.—The Great Auks (*Pinguinus*, or *Plautus*), iv., 258 ; the Great Auk (*P. impennis*), iv., 258.
 " " 3.—The Coulternebs (*Mormon*), iv., 262 ; the Coulterneb, or Arctic Puffin (*M. fratercula*), iv., 262.

FAMILY VI.—THE PENGUINS (APTENODYTÆ), iii., 265.

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 " " 2.—The True Penguins (*Spheniscus*), iv., 267 ; the Spectacled or Cape Penguin (*S. demersus*), iv., 267.
 " " 3.—The Leaping Penguins (*Eudypetes*), iv., 268 ; the Golden or Crested Penguin (*E. catarractes*), iv., 268.

CLASSIFICATION OF BIRDS

AS ADOPTED IN THE BRITISH MUSEUM.

ORDER I.

BIRDS OF PREY (ACCIPITRES). [LINNÆUS.]

SUB-ORDER I.

DIURNAL BIRDS OF PREY (ACCIPITRES DIURNI).

FAMILY I.—VULTURES (VULTURIDÆ).

- Sub-Family* 1.—The Bearded Vultures (Gypætinæ).
 " " 2.—The Condors (Sarcorhamphinae).
 " " 3.—The Vultures Proper (Vulturinae).
 " " 4.—The Eagle Vultures (Gypohieracinae).

FAMILY II.—THE FALCONS (FALCONIDÆ).

- Sub-Family* 1.—The Caracaras (Polyborinae).
 " " 2.—The Buzzards (Buteoninae).
 " " 3.—The Eagles (Aquilinae).
 " " 4.—The Falcons Proper (Falconinae).
 " " 5.—The Kites (Milvinae).
 " " 6.—The Sparrow Hawks (Accipitrinae).
 " " 7.—The Harriers (Circinae).

SUB-ORDER II.

NOCTURNAL BIRDS OF PREY (ACCIPITRES NOCTURNI).

FAMILY I.—THE OWLS (STRIGIDÆ).

- Sub-Family* 1.—The Hawk Owls (Surninae).
 " " 2.—The Horned Owls (Buboninae).
 " " 3.—The Owlets (Syrninae).
 " " 4.—The Owls Proper (Striginae).

ORDER II.

PASSERES.

TRIBE I.

GAPERS (FISSIROSTRES).

SUB-TRIBE I.—NOCTURNAL FISSIROSTRES (FISSIROSTRES NOCTURNI).

FAMILY I.—THE GOAT-SUCKERS (CAPRIMULGIDÆ).

- Sub-Family* 1.—The Oil Birds (Steatorninae).
 " " 2.—The Goat-suckers Proper (Caprimulginae).
 " " 3.—The Podagers (Podagerinae).

SUB-TRIBE II.—DIURNAL FISSIROSTRES (FISSIROSTRES DIURNI).

FAMILY II.—THE SWALLOWS (HIRUNDINIDÆ).

- Sub-Family* 1.—The Swifts (Cypselinae).
 " " 2.—The Swallows Proper (Hirundininae).

FAMILY III.—THE ROLLERS (CORACIADÆ).

- Sub-Family* 1.—The Rollers (Coraciinae).
 " " 2.—The Todies (Todinae).
 " " 3.—The Broad-throats (Eurylaiminae).
 " " 4.—The Mot-mots (Momotinae).

FAMILY IV.—THE TROGONS (TROGONIDÆ).

FAMILY V.—THE KINGFISHERS (ALCEDINIDÆ).

- Sub-Family* 1.—The Buccos (Bucconinae).
 " " 2.—The Halcyons (Halcyoninae).
 " " 3.—The Kingfishers (Alcedininae).
 " " 4.—The Jacamars (Galbulinae).

FAMILY VI.—THE BEE EATERS (MEROPIDÆ).

- Sub-Family* 1.—The Bee Eaters (Meropinae).

TRIBE II.

SLENDER-BILLS (TENUIROSTRES).

FAMILY I.—THE HOOPES (UPUPIDÆ).

- Sub-Family* 1.—The Hoopes Proper (Upupinae).
 " " 2.—The Plumed Birds (Epimachinae).

FAMILY II.—THE SUN BIRDS (PROMEROPIDÆ).

- Sub-Family* 1.—The Sun Birds Proper (Promeropinae).
 " " 2.—The Guit-Guits (Cærebinæ).

FAMILY III.—THE HUMMING BIRDS (TROCHILIDÆ).

- Sub-Family* 1.—The Wedge-tailed Humming Birds (Gryppinae).
 " " 2.—The Curved-billed Humming Birds (Trochilinae).
 " " 3.—The Straight-billed Humming Birds (Mellisuginae).

FAMILY IV.—THE HONEY-EATERS (MELIPHAGIDÆ).

- Sub-Family* 1.—The Honey-creepers (Mezomelinae).
 " " 2.—The Honey-eaters Proper (Meliphaginae).
 " " 3.—The Honey-feeders (Melithreptinae).

FAMILY V.—THE CREEPERS (CERTHIDÆ).

- Sub-Family* 1.—The Oven Birds (Furnariinæ).
 " " 2.—The Sharp-tails (Synallaxinæ).
 " " 3.—The Tree-creepers (Dendrocolaptinæ).
 " " 4.—The Creepers Proper (Certhiinæ).
 " " 5.—The Nut-hatches (Sittinæ).
 " " 6.—The Mohouas (Orthonyctinæ).
 " " 7.—The Wrens (Menurinae).

TRIBE III.

THE TOOTHED-BILLS (DENTIROSTRES).

FAMILY I.—THE WARBLERS (LUSCINIDÆ).

- Sub-Family* 1.—The Soft-tailed Warblers (Malurinae).
 " " 2.—The Warblers Proper (Luscininae).
 " " 3.—The Robins (Erythacinæ).
 " " 4.—The Accentors (Accentorinæ).
 " " 5.—The Titmice (Parinæ).
 " " 6.—The Bush-creepers (Mniotiltinæ).
 " " 7.—The Wagtails (Motacillinæ).

FAMILY II.—THE THRUSHES (TURDIDÆ).

- Sub-Family* 1.—The Ant-thrushes (Formicariinæ).
 " " 2.—The Thrushes Proper (Turdinæ).
 " " 3.—The Babblers (Timalinæ).
 " " 4.—The Orioles (Oriolinæ).
 " " 5.—The Bulbuls (Pycnonotinæ).

FAMILY III.—THE FLYCATCHERS (MUSCICAPIDÆ).

- Sub-Family* 1.—The Mourners (Querulinæ).
 " " 2.—The Alectrures (Alectrurinæ).
 " " 3.—The Tyrants (Tyranninæ).
 " " 4.—The Becards (Tityrinæ).
 " " 5.—The Flycatchers Proper (Muscicapinæ).
 " " 6.—The Greenlets (Vireoninæ).

FAMILY IV.—THE CHATTERERS (AMPELIDÆ).

- Sub-Family* 1.—The Thick-heads (Pachycephalinæ).
 " " 2.—The Manakins (Piprinæ).
 " " 3.—The Chatterers Proper (Ampelinæ).
 " " 4.—The Cuckoo Shrikes (Campephaginæ).
 " " 5.—The Drongo Shrikes (Dicrurinæ).

FAMILY V.—THE BUTCHER BIRDS (LANIIDÆ).

- Sub-Family* 1.—The Butcher Birds Proper (Laniinæ).
 " " 2.—The Bush Shrikes (Thamnophilinæ).

TRIBE IV.

THE CONICAL BILLS (CONIROSTRES).

FAMILY I.—THE CROWS (CORVIDÆ).

- Sub-Family* 1.—The Piping Crows (Phonogaminæ).
 " " 2.—The Jays (Garrulinæ).
 " " 3.—The Tree Crows (Calleatinæ).
 " " 4.—The Crows Proper (Corvinæ).
 " " 5.—The Fruit Crows (Gymnoderinæ).
 " " 6.—The Choughs (Pyrrhocoracinæ).

*FAMILY II.—THE BIRDS OF PARADISE (PARADISEIDÆ).**FAMILY III.—THE STARLINGS (STURNIDÆ).*

- Sub-Family* 1.—The Glossy Starlings (Ptilorhynchinæ).
 " " 2.—The Grakles (Graculinæ).
 " " 3.—The Ox-peckers (Buphaginæ).
 " " 4.—The Starlings Proper (Sturninæ).
 " " 5.—The Boat-tails (Quiscalinæ).
 " " 6.—The Hang-nests (Icterinæ).
 " " 7.—The Troop-birds (Agelainæ).

FAMILY IV.—THE FINCHES (FRINGILLIDÆ).

- Sub-Family* 1.—The Weavers (Ploccinæ).
 " " 2.—The Hawfinches (Coccothraustinæ).
 " " 3.—The Tanagers (Tanagrinae).
 " " 4.—The Finches Proper (Fringillinæ).
 " " 5.—The Buntings (Emberizinae).
 " " 6.—The Larks (Alaudinæ).
 " " 7.—The Bullfinches (Pyrrhulinæ).
 " " 8.—The Crossbills (Loxianæ).
 " " 9.—The Plant Cutters (Phytotominæ).

*FAMILY V.—THE COLIES (COLIDÆ).**FAMILY VI.—THE PLANTAIN EATERS (MUSOPHAGIDÆ).*

- Sub-Family* 1.—The Plantain Eaters Proper (Musophaginæ).
 " " 2.—The Hoactzins (Opisthocominæ).

*FAMILY VII.—THE HORN BILLS (BUCEROTIDÆ).**ORDER III.*

THE CLIMBERS (SCANSORES).

FAMILY I.—THE TOUCANS (RAMPHASTIDÆ).

- Sub-Family* 1.—The Toucans (Ramphastinæ).

FAMILY II.—THE PARROTS (PSITTACIDÆ).

- Sub-Family* 1.—The Ground Parrots (Pezoporinæ).
 " " 2.—The Macaws (Arainæ).
 " " 3.—The Lories (Lorinæ).
 " " 4.—The Parrots Proper (Psittacinæ).
 " " 5.—The Cockatoos (Cacatuinae).

FAMILY III.—THE WOODPECKERS (PICIDÆ).

- Sub-Family* 1.—The Barbets (Capitoninæ).
 " " 2.—The Soft-tailed Woodpeckers (Picumninæ).
 " " 3.—The Woodpeckers Proper (Picinæ).
 " " 4.—The Green Woodpeckers (Gecininae).
 " " 5.—The Black Woodpeckers (Melanerpinæ).
 " " 6.—The Cuckoo Woodpeckers (Colaptinæ).
 " " 7.—The Wry-necks (Yuncinæ).

FAMILY IV.—THE CUCKOOS (CUCULIDÆ).

- Sub-Family* 1.—The Honey Guides (Indicatorinæ).
 " " 2.—The Rain Cuckoos (Saurotherinæ).
 " " 3.—The Ground Cuckoos (Coccyzinæ).
 " " 4.—The Tick Eaters (Crotophaginæ).
 " " 5.—The Cuckoos Proper (Cuculinæ).

ORDER IV.

PIGEONS (COLUMBÆ).

FAMILY I.—THE PIGEONS (COLUMBIDÆ).

- Sub-Family* 1.—The Fruit Pigeons (Treroninæ).
 " " 2.—The Doves (Columbinæ).
 " " 3.—The Crowned Pigeons (Gourinæ).
 " " 4.—The Toothed Pigeons (Didunculinæ).
 " " 5.—The Dodos (Didinæ).

ORDER V.

GALLINACEOUS BIRDS
(GALLINÆ).

FAMILY I.—THE CURASSOWS (CRACIDÆ).

- Sub-Family* 1.—The Guans (Penelopinæ).
 " " 2.—The Curassows Proper (Cracinæ).

FAMILY II.—THE MEGAPODES (MEGAPODIDÆ).

- Sub-Family* 1.—The Tallegallas (Tallegallinæ).
 " " 2.—The Mound Birds (Megapodinæ).

FAMILY III.—THE PHEASANTS (PHASIANIDÆ).

- Sub-Family* 1.—The Peacocks (Pavoninæ).
 " " 2.—The Pheasants Proper (Phasianinæ).
 " " 3.—The Jungle Fowls (Gallinæ).
 " " 4.—The Turkeys (Meleagrinæ).
 " " 5.—The Tufted Pheasants (Lophophorinæ).

FAMILY IV.—THE GROUSE (TETRAONIDÆ).

- Sub-Family* 1.—The Partridges (Perdicinæ).
 " " 2.—The Quails (Turnicinæ).
 " " 3.—The American Partridges (Odontophorinæ).
 " " 4.—The Grouse Proper (Tetraoninæ).
 " " 5.—The Sand Grouse (Pteroclinæ).

FAMILY V.—THE SHEATHBILLS (CHIONIDÆ).

- Sub-Family* 1.—The Shore Larks (Thinocorinæ).
 " " 2.—The Sheathbills Proper (Chionidinæ).

FAMILY VI.—THE TINAMOUS (TINAMIDÆ).

- Sub-Family* 1.—The Tinamous (Tinaminæ).

ORDER VI.

OSTRICHES (STRUTHIONES).

FAMILY I.—THE OSTRICHES (STRUTHIONIDÆ).

- Sub-Family* 1.—The Ostriches Proper (Struthioninæ).
 " " 2.—The Kivis (Apteryginæ).
 " " 3.—The Bustards (Otidinæ).

ORDER VII.

STILT-WALKERS (GRALLÆ).

FAMILY I.—THE PLOVERS (CHARADRIADÆ).

- Sub-Family* 1.—The Thick-knees (Edieneminæ).
 " " 2.—The Coursers (Cursorinæ).
 " " 3.—The Pratincoles (Glareolinæ).
 " " 4.—The Plovers Proper (Charadrinæ).

- Sub-Family* 5.—The Oyster Catchers (Hæmatopodinae).
 " " 6.—The Turnstones (Cinclinæ).

FAMILY II.—THE HERONS (ARDEIDÆ).

- Sub-Family* 1.—The Trumpeters (Psophinæ).
 " " 2.—The Cranes (Gruinæ).
 " " 3.—The Herons Proper (Ardeinæ).
 " " 4.—The Storks (Ciconinæ).
 " " 5.—The Ibises (Tantalinae).

FAMILY III.—THE WOODCOCKS (SCOLOPACIDÆ).

- Sub-Family* 1.—The Godwits (Limosinæ).
 " " 2.—The Longshanks (Totaninæ).
 " " 3.—The Avocets (Recurvirostrinæ).
 " " 4.—The Sandpipers (Tringinæ).
 " " 5.—The Woodcocks Proper (Scolopacinæ).
 " " 6.—The Phalaropes (Phalaropodinæ).

FAMILY IV.—THE SCREAMERS (PALAMEDEIDÆ).

- Sub-Family* 1.—The Jacanas (Parrinæ).
 " " 2.—The Screamers Proper (Palamedinæ).

FAMILY V.—THE RAILS (RALLIDÆ).

- Sub-Family* 1.—The Rails Proper (Rallinæ).
 " " 2.—The Gallinules (Gallinulinæ).

ORDER VIII.

GEESE (ANSERES).

FAMILY I.—THE DUCKS (ANATIDÆ).

- Sub-Family* 1.—The Flamingoes (Phœnicopterinae).
 " " 2.—The Spur-winged Geese (Plectropterinae).
 " " 3.—The Geese Proper (Anserinæ).
 " " 4.—The Swans (Cygninæ).
 " " 5.—The Ducks Proper (Anatinæ).
 " " 6.—The Diving Ducks (Fuliginæ).
 " " 7.—The Pin-tailed Ducks (Eristaturinae).
 " " 8.—The Goosanders (Merginæ).

FAMILY II.—THE DIVERS (COLYMBIDÆ).

- Sub-Family* 1.—The Divers Proper (Colymbinæ).
 " " 2.—The Grebes (Podicipinæ).
 " " 3.—The Finfoots (Heliorninæ).

FAMILY III.—THE AUKS (ALCIDÆ).

- Sub-Family* 1.—The Auks (Alcinæ).
 " " 2.—The Crested Divers (Phalacropterinae).
 " " 3.—The Penguins (Spheniscinæ).
 " " 4.—The Loons (Urinæ).

FAMILY IV.—THE PETRELS (PROCELLARIDÆ).

- Sub-Family* 1.—The Petrels Proper (Procellarinæ).
 " " 2.—The Albatrosses (Diomedcinæ).

FAMILY V.—THE GULLS (LARIDÆ).

- Sub-Family* 1.—The Gulls Proper (Larinæ).
 " " 2.—The Scissor-bills (Rhynchopinae).
 " " 3.—The Terns (Sterninæ).

FAMILY VI.—THE PELICANS (PELICANIDÆ).

- Sub-Family* 1.—The Tropic Birds (Phaetoninæ).
 " " 2.—The Darters (Plotinæ).
 " " 3.—The Pelicans Proper (Pelicaninæ).

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